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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

JULY, 1876.



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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,

Statistical Division, July 19, 1876.

SIR: I respectfully present for publication a report on the condition of the crops in July; a paper descriptive of the agricultural branch of the Centennial Exposition; some official documents from the Spanish Government in regard to tree-planting; a communication from our minister in Mexico in regard to coffee-culture in that country; and the usual variety of minor statistics.

Very respectfully,

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

DIGEST OF CROP REPORTS.

CORN.

ACREAGE.—In New Hampshire, New York, Michigan, and Minnesota the area planted is slightly less than last year. This is doubtless chiefly, if not exclusively, due to the protracted cold and wet spring in those States. Tennessee also returns a decrease of 1 per cent. In Vermont, Delaware, and Maryland the extent of area remains unchanged. In all the remaining States it has been enlarged. Among the States reporting the largest relative increase were, California, 34 per cent.; Massachusetts and Nebraska, 20; Texas, 15; Wisconsin, 10; Georgia and Florida, 9; Rhode Island, Connecticut, and Indiana, 7; Ohio, 6; Arkansas, 5; Maine, South Carolina, Alabama, West Virginia, Illinois, Iowa, and Oregon, 4.

Returns from the Southern States indicate a tendency to increase the corn and grain crops, from a growing conviction that the production of home-supplies will be more conducive to agricultural prosperity than the hitherto prevalent system of overproduction of cotton, which not only depresses its own price, but also enhances the cost of provisions, clothing, &c., produced elsewhere by extending the market for their consumption.

The increase of the entire corn-area of the country, over last year, amounts to 5 per cent.

CONDITION.—The crop, in several sections, is in a condition of more than

ordinary thrift and promise. In the northern section of the Eastern, Middle, and Northwestern States, it is more backward than usual, owing to delay in planting, occasioned by protracted cold and wet weather; but it is generally in a thrifty growing state. In the States on the Atlantic coast the condition ranges from 100 to 108, as far as, and including, Virginia; south of Virginia an extraordinary rain-fall, of six to seven days' duration, about the third week in June, resulted in extensive overflows, occasioned extensive injuries to the crop. In many localities along the water-courses, where it was extensively washed out or otherwise ruined by floods, it has been replanted, and the second growth is pushing forward vigorously. With the exception of that protracted rain-storm along the coast, the weather throughout the Southern States has been generally favorable to clean cultivation and a healthy growth. In Texas an extraordinary crop is nearly matured. The returns show a condition of 121, with an increase in acreage of 15 per cent. Throughout the Ohio and Northern Mississippi Valleys, and in Michigan, June was a very wet month; the rain-fall was so excessive as to seriously interfere with timely cultivation and to foster an extraordinary growth of weeds. Owing to this cause principally, the condition in that section ranges from 100 in Indiana down to 88 in Iowa, Illinois being 89 and Missouri 97. Like causes have reduced the condition in Kansas to 96. On the Pacific coast the crop is unusually promising, the figures being for California 105, and for Oregon 101.

Insect-injuries have been limited to depredations by worms, and those not extensive or serious.

No droughts over extended areas are reported, and local droughts, for the most part, have not been protracted or severe.

Taking 100 as indicating a condition of unimpaired stands and ordinary thrift, the entire crop averages 97.

Details of local exigencies affecting the crop will be found in the notes below.

MAINE.—*Waldo*: Never better. *York*: The best grown for twenty years. *Cumberland*: Promising.

NEW HAMPSHIRE.—*Hillsborough*: Backward, but doing well.

VERMONT.—*Grand Isle*: Did not come up well, owing to wet and cold May. *Rutland*: Much had to be replanted, owing to poor seed and dry weather. *Caledonia*: Late, but good stand.

CONNECTICUT.—*New London*: Somewhat eaten by gray worms, but growing well.

NEW YORK.—*Albany*: Looks very well. *Seneca*: Good color and growing rapidly. *Otsego*: Somewhat backward, but growing well. *Genesee*: Doing finely. *Saratoga*: Much injured by worms. *Washington*: Late, but growing finely. *Orange*: The prospect of a large yield seldom better. *Allegany*: Have never seen corn so large.

NEW JERSEY.—*Atlantic*: Early corn will be ruined unless we have rain soon. *Warren*: Fine, but now suffering a little from dry weather.

PENNSYLVANIA.—*Cameron*: Planted late, but coming forward finely. *Perry*: Backward, but well set. *Clearfield*: Large acreage; backward. *Indiana*: Could not wish a better prospect. *Armstrong*: Late, but even stand and growing finely. *Beaver*: Has suffered from drought. *Butler*: Much late, but all looks well. *Delaware*: Much injured by worms where the hills were not strewn with salt; now quite vigorous. *Clinton*: Late planted. That planted in time very fine. *Lycoming*: Very fine, except a few complaints of the white worm injuring the roots. *Elk*: Very fine.

MARYLAND.—*Caroline*: Looks well. *Howard*: Promising. *Worcester*: Late, but promising. *Baltimore*: A good stand. *Washington*: Good.

VIRGINIA.—*Caroline*: Favorable season. *Madison*: Looking well. *Russell*: Injured by the cut-worm. *Tazewell*: Injured in some neighborhoods by the wire-worm. *Chesapeake*: Large acreage; good stand; well worked, and very promising. *Matthews*: Being seriously injured by worms. *Powhatan*: Backward. *King George*: Promises finely. *Middlesex*: Thrifty. *Orange*: Has suffered from drought. *Spotsylvania*: A very large acreage; well grown. *Campbell*: Promises well. *Dinwiddie*: Increased acreage; in fine condition. *James City*: The dry June has put our corn in beautiful order; ready for rain. *King and Queen*: Backward. *Prince Edward*: Checked by dry weather. *Sussex*: The crops splendid, but now suffering somewhat on stiff bottoms from drought.

Elizabeth City: Smaller area, but more promising. *Halifax*: Increased acreage, owing to failure in tobacco-plants; well worked, and looking healthy. *Charles City*: Injured by a severe drought for the last four weeks. *Highland*: Never better. *Mecklenburgh*: Looking well where worked in time. *Northampton*: Promising, notwithstanding the drought.

NORTH CAROLINA.—*Rutherford*: Injured by overflow; replanted to a considerable extent. *Wilkes*: Badly injured by freshet June 17. *Pasquotank*: Favorable season for cultivating; late, but looks well. *Caldwell*: Much lost by overflow and other injury from rain-storms. *Cherokee*: A small worm has proved so destructive to the crop on low land that not more than 33 to 50 per cent. of a crop can be raised on such land. *Alamance*: Late, but good stand and promising. *Wilson*: Fair prospect for a good crop. *Caswell*: Very promising. *Duplin*: Better than ever known. *Person*: Increase in acreage, owing to failure of tobacco-plants. *Pitt*: Very favorable weather in June, and a large crop promised. *Nash*: Early planted, very good; late, a bad stand and small. *Beaufort*: Very fine. *Hertford*: Increased acreage in good condition. *Polk*: Much wasted away, and much under water so long that it rotted; more than 33 per cent. planted over.

SOUTH CAROLINA.—*Edgefield*: Small, but good stand and vigorous. *Laurens*: Vast quantities washed out or killed by devastating storms; much replanted. *Beaufort*: A rain-storm in June, lasting a week, during which upward of 15 inches of water fell, did great injury to the crop. *Clarendon*: In a critical state for want of rain. *Colleton*: Never better. *Chester*: On low lands, along water-courses, almost destroyed by overflow. *Georgetown*: A good stand, checked by drought in May, and now too wet to plow. *Lexington*: Inferior, having suffered first from drought and then from excessive rain. *Marlborough*: Very good. *Richland*: Much injured and destroyed by a freshet. That destroyed planted over, with a fair prospect. *Fairfield*: Fair prospect for a good crop. *Horry*: Badly damaged by heavy rains, June 10 to 20. *Spartansburgh*: Heavy rains June 11 to 15, flooded all bottoms, and corn along large streams was completely destroyed. The farmers have planted it over. *Orangeburgh*: Very much injured by heavy rain-storms.

GEORGIA.—*Dooly*: Promises a fine yield. *Elbert*: A freshet in June destroyed corn and cotton in the bottom-lands, but these lands are being replanted with corn. *Fannin*: Never better. *Thomas*: Never better, and larger acreage than since the war. Forward corn is made, and one or two showers will make the whole crop good as the ground can bear. *Towns*: Very late and much damaged by a recent freshet. *Troup*: Prospect very good. *Upson*: Finest prospect for ten years. *Gwinnett*: Unusually fine and forward on upland; too wet on lowland. *Clayton*: Never more promising on upland; too wet on bottoms. *Columbia*: Looking well. *Hall*: Very small; too much rain. *Hancock*: More planted than in any year since the war, and the finest ever seen. *Henry*: Acreage increased 25 per cent. *Laurens*: Very small, but healthy and vigorous. *Madison*: Bad stand and two weeks late; on lowlands 30 per cent. was destroyed by overflow; now being replanted. *Mitchell*: The most promising since 1865; one more "good season" and the largest yield for years will be secured. *Rabun*: Very much damaged by freshets and bud-worms. *Randolph*: Very good. *Spalding*: Promises to exceed any crop for fifteen years. *Union*: Good on uplands, but no stand on bottoms, owing to ravages of bud-worms. *Whitfield*: Much injured on lowlands by the great quantities of rain in June. *Dodge*: Very good prospect. *Haralson*: Two weeks late, but looking well. *Jefferson*: Good. *McDuffie*: A dry May and wet June have been the life of the crop. *Cobb*: Finest prospect for years. *Walton*: Very promising. *Hart*: Good crop. *Jackson*: Washed away on bottoms; on upland good where well worked. *Lincoln*: The great profusion of rain 11th to 18th of June, overflowing the bottoms, entirely destroyed whole crop; a large portion has been replanted and is doing finely. *Terrell*: Prospect much improved during June. *Appling*: Rather backward, owing to dry and extreme hot weather, which caused it to burn badly, and especially that well manured. *Carroll*: Though small, looks very fine; well worked.

FLORIDA.—*Madison*: Greater acreage and better condition than last year. *Jackson*: Well worked and looks well. *Gadsden*: The prospect very flattering.

ALABAMA.—*Baldwin*: First planting nearly all killed. *Clarke*: Early and late planted doing well. *Greene*: Poor prospect. *Crenshaw*: Good prospect on dry land. *Cahoon*: Prosperous. *Jefferson*: Late ten days, but fast recovering. *Barbour*: Free from grass, and the season very favorable. *Lauderdale*: The cut-worm has been very destructive on all low lands. *Blount*: Backward. *Conecuh*: Well worked out, and fine. *Colbert*: Large and very fine crop. *Cherokee*: Looks very well where cultivated.

MISSISSIPPI.—*Jefferson*: Ruined by long drought. *Lincoln*: Materially injured by a drought through the whole of June. *Lee*: Late three to four weeks, and foul, owing to damages by heavy floods June 1 and 15; some yet to plant. *Grenada*: Promising where well cultivated. *Amitie*: Increased acreage, and greater attention to the crop than for several years. *Pike*: Doing well. *Perry*: Looks 10 per cent. better than last year. *Monroe*: Will make enough for home consumption. *Louisiana*: The prospect not

so good as last year. *Newton*: Well worked, clean, and prosperous. *Chickasaw*: Promising where well worked; the freedmen laboring well. *Choctaw*: Increased acreage, owing to the fact that many plowed up cotton and planted corn. *Franklin*: Materially injured by drought.

LOUISIANA.—*Concordia*: A large increase in the acreage; more disposition to go into farming and quit the ruinous cotton-planting. *East Baton Rouge*: In all the neighborhoods where the labor has not been interfered with, in splendid condition. *Madison*: Backward, but growing well. *Carroll*: The yield will not come up to last year. *West Feliciana*: Splendid up to this time, but beginning to suffer from drought. *Jackson*: Backward, but very promising.

TEXAS.—*Bastrop*: Fine, with much larger acreage than last year. *Coryell*: Better than for years; a full crop sure. *Harrison*: Raising a heavy crop. *De Witt*: Suffering from dry weather. *Upshur*: Indications of a yield 75 per cent. above last year. *Colorado*: A little late, but one of the most promising crops for years. *Lavaca*: Splendid, though now suffering from drought in localities. *Williamson*: A promise of the largest crop ever made; of fine quality. *Caldwell*: Never better. *Medina*: Injured by a drought of two and a half months, but now improving. *Red River*: Now silking, with a prospect of a very heavy crop. *Matagorda*: Improved by rains. *Waller*: The crop made sure, and will be of full weight. *Austin*: Secured by the late rains, and sufficient for home consumption. *Burleson*: Doing well. *Collin*: Almost made; will be a fine yield. *Dallas*: Never better. *Gillespie*: Very good. *Smith*: Very fine on red land; too wet on gray land. *Titus*: Large acreage and better prospect than for many years. *Washington*: Heaviest crop ever raised. *Bexar*: Never better; all made. *Burnet*: Early planted, splendid; late, doing well. *Fannin*: Good; the most favorable season for years. *Travers*: Never better.

ARKANSAS.—*Boone*: Suffering from lack of cultivation, owing to excessive rain. *Saint Francis*: Late, but looking extremely well. *Baxter*: The smallest ever known. *Monroe*: Crop will be abundant. *Arkansas*: Looks remarkably well; but a small black beetle, which seems to feed on the roots, has injured it 10 per cent. Have seen ten to twenty-five in a hill. *Bradley*: Irregular, and rather late. *Izard*: Is healthy, clean, and nice, and promises a large yield. *Fulton*: Well worked, healthy, and growing finely. *Marion*: Small, but looks well. *Ouachita*: Not doing well.

TENNESSEE.—*Anderson*: Bad stand; a small worm cut off the roots. Some have planted two and three times. *Lincoln*: Well cultivated, and looks unusually well. *Blount*: Generally looks well, though injured badly in places by the bud-worm. *Gibson*: Late planted, and damaged by rains in low lands. *Loudon*: Fine. *Rhea*: A good season for corn. *Sullivan*: Growing finely. *Hawkins*: Looks well. *James*: Too much rain for corn on low lands. *Knox*: Much damaged on the river-bottoms by overflow. *Bedford*: Looks fine. *Giles*: Never more promising. *Robertson*: Backward, but looks very well. *Van Buren*: Depredations by the bud-worm. *Obion*: Damaged by overflow. *Greene*: Irregular, but thrifty. *Sequatchie*: Damaged considerably by the bud-worm and other insects. *Montgomery*: Never better. *Trousdale*: Looking well.

WEST VIRGINIA.—*Tucker*: Acreage two hundred; looks well. *Pocahontas*: A fine prospect. *Grant*: A little backward. *Pendleton*: A little late, but very promising. *Cabell*: Promising. *Monroe*: First rate. *Wetzel*: Promises a good crop.

KENTUCKY.—*Daviess*: Damaged badly by excessive rains. *Ohio*: Drowned out in a portion of the county. *Spencer*: Clean and in fine condition. *Bath*: Decidedly improved by rains for the last ten days. *Gallatin*: Materially injured by drought. *Mason*: Looks remarkably well; the ground well tilled and clean. *Metcalfe*: Looking well. *Owsley*: The prospect better than for years. *Russell*: Injured by the wire-worm, a little black bug, and the corn-louse; but all clean and improving rapidly. *Hardin*: Looks well. *Calloway*: Looks well.

OHIO.—*Adams*: Small, but good stands and well worked. *Holmes*: Growing rapidly, but in weeds and grass, owing to wet weather. *Perry*: Coming forward very rapidly. *Vinton*: Good stand, but small. *Washington*: Much of the crop late, but growing rapidly. *Defiance*: Damaged by excessive rains. *Miami*: Never better. *Jackson*: Small, but warm showers are bringing it out fast. *Wayne*: Good on uplands; injured on lowlands by heavy rains. *Mercer*: Largely increased acreage, in fine condition.

MICHIGAN.—*Montcalm*: Never so backward; many fields not yet touched with the plow or hoe. *Ottawa*: Too much rain. *Wayne*: Planted late, and wet weather has prevented proper cultivation. *Wexford*: Late in coming up, but growing very rapidly. *Lenawee*: Very backward. *Calhoun*: Injured by continuous heavy rains, which have prevented working. *Hillsdale*: Set back somewhat by the wet weather. *Ionia*: Very backward, owing to heavy and continuous rains; impossible to work in it. *Leelanau*: Never more promising. *Allegan*: Very weedy, owing to continuous rain. *Barry*: Small and backward. *Mason*: Looks well. *Newaygo*: A greater fall of rain in June than ever before, and the indications are that the crop will be the poorest ever seen here. *Tuscola*: Rains have delayed cultivating, and weeds are getting a large start of the crop. *Muskegon*: Suffering on heavy land from excessive rains. *Mecosta*: Materially damaged by excessive rains.

INDIANA.—*Brown*: A fine growth, in fine cultivation. *Jennings*: Gone up on wet land; weedy, but looking well, on dry land. *Lake*: Remarkably heavy and continuous rains for three weeks past, and many fields beyond redemption. *Stark*: Injured by the rainy weather. *Decatur*: Promises the largest crop ever produced. *Steuben*: Much trouble from failure in seed-corn; hundreds of acres replanted. *Fayette*: The stand is extra good. *Hamilton*: A very large crop planted; small, but looks exceedingly well. *Hendricks*: Good. *Jasper*: Much in bad condition owing to rains for the last four weeks. *Kosciusko*: Growing finely, but very weedy owing to continual rains. *Martin*: Becoming foul, and too wet for cultivating. *Morgan*: Never a larger crop or a better prospect. *Noble*: Too wet for working the crop. *Pike*: Injured by the rains on flat lands; otherwise the prospect good. *Spencer*: June a very wet month; corn a failure on low land, and the weeds have the advantage decidedly on the uplands. *Wabash*: Too wet for cultivating. *Wells*: Being injured in places by the wet weather. *Whitley*: Seldom better. *Johnson*: Scalding on the flat lands, owing to continual rain; no work being done, and the weeds growing.

ILLINOIS.—*Clinton*: Large crop, but poorly worked. *Elliingham*: Too wet for cultivating. *Grundy*: Cultivation almost entirely prevented the last three weeks by excessive rains. *Jersey*: Growing finely. *Lake*: Looks well. *Menard*: Rains constant but light and the crop unusually clear of weeds. *Mercer*: Grassy. *Putnam*: On the bottoms, mostly ruined by overflow. *Sangamon*: Some injury from excessive rains. *Schuylerville*: Small from late planting, but the ground never in better condition or clearer of weeds. *Saint Clair*: Splendid; clear of weeds. *Shelby*: The weeds will take the late corn before the ground is dry enough to work. *Vermillion*: In a critical condition, from excessive rains. *White*: Considerable already lost on low lands, from excessive rains. *Williamson*: The meadows are flooded and corn on low grounds is seriously injured. *De Kalb*: Not promising, owing to excessive rain-fall; many fields untouched since planting and likely to remain so. *Iroquois*: The wet weather for the last four weeks has cut off the prospect nearly one-half. *Livingston*: The outlook bad; it has rained for nearly two months. *Mason*: A little backward, but clean and looking well. *Rock Island*: Much planted late, but good stand. *Carroll*: Slow growth and prolific weeds, owing to the excessive rains. *Lee*: Too much rain for a healthy condition. *Monroe*: Backward and weedy, but strong and thrifty. *Montgomery*: Rather yellow in places, but a few days of sunshine will make it all right. *McLean*: On low, flat lands will make only a little fodder, owing to incessant rains.

WISCONSIN.—*Clark*: Crops backward. *Dunn*: Late planted, on account of excessive rains, and in some cases the crops withered by subsequent decline of temperature; doing better now. *Dodge*: Crops look well. *Douglas*: Seeding delayed by cold spring. *Green Lake*: Backward. *Outagamie*: Looks well; abundant rains. *Richland*: Weedy, yet looks well. *Saint Croix*: Backward. *Walworth*: Very uneven; too much rain after planting.

MINNESOTA.—*Wright*: Good.

IOWA.—*Appanoose*: As fine a crop as ever raised here. *Buena Vista*: Drought. *Cerro Gordo*: Rescued by late rains. *Clinton*: Too much rain. *Des Moines*: Too much rain. *Hardin*: Growing finely. *Howard*: No frosts since May 1; quite unusual; retarded, however, by cold spell. *Johnson*: Half the crop good, being well cultivated and early planted; the other half delayed by bad weather at planting and not good. *Madison*: Late. *Mahaska*: Late, but healthy. *Tama*: Seasonable for corn. *Jefferson*: Rain prevented working. *Monona*: Injured by drought, but rain has come at last. *Washington*: Growing well on flat land, but poor on rolling upland.

MISSOURI.—*Phelps*: Cannot be properly worked, owing to excessive rains. *Barton*: Cannot be cultivated. *Chariton*: Stands injured by field-mice; some fields so ravaged as to require second planting. *Nodaway*: Backward, but promising. *Caldwell*: Needs working, but we cannot get into the field without miring. *Dallas*: Backward. *Daviess*: Very backward, and one-half not plowed at all, owing to continued heavy rains. *Dunklin*: Favorable. *Mississippi*: Not well cultivated, owing to the rains. *Pettis*: Very flattering. *Shelby*: Scalding, and suffering for want of cultivation. *Stone*: Late fifteen days, but looks well. *Vernon*: One month late. *Clay*: Late. *Dent*: Late, but thrifty. *Maries*: Suffering for want of cultivation. *Montgomery*: Weedy and grassy. *Grundy*: Too wet for corn; much on bottom-lands has not been plowed at all. *Perry*: Three weeks late, but looks well. *Buchanan*: Looks well.

KANSAS.—*Bourbon*: Backward and very weedy; too much rain. *Chase*: Very late, but clean. *Johnson*: Weedy; too much rain. *Franklin*: Very weedy; no plowing can be done as the ground is thoroughly soaked, and it is still raining. *Jackson*: Rather backward, but looks well. *Lambert*: On the prairie, rather short; too much rain; better on the bottoms. *Linn*: On wet land, weedy; on upland, the best prospect for years. *Lyon*: Much rotted in the ground, owing to excessive rains. *Miami*: Growing beautifully. *Cherokee*: Fully half has not been cultivated at all, owing to wet weather. *Neosho*: Many fields very weedy and not much prospect of getting them clean. *Reno*: Extra good.

NEBRASKA.—*Knox*: Hurt by frost when coming up. *Boone*: Injured by extreme

cold previous to June 20. *Stanton*: Badly damaged by the cut-worm and gopher. *Antelope*: Excellent stand and very promising. *Dodge*: Early planted, doing well; late planted, very backward. *Wayne*: Promises better than usual.

CALIFORNIA.—*Siskiyou*: Materially damaged by the frosts. *Yuba*: Increased acreage and fair crop. *Sonoma*: Greatly increased acreage and yield.

OREGON.—*Clackamas*: Very backward.

UTAH.—*Weber*: Backward, but looking well.

DAKOTA.—*Davison*: Doing well. *Buffalo*: Suffering from severe drought. *Richland*: Cut short at least one-half; drought and young grasshoppers.

NEW MEXICO.—*Taos*: Has escaped the grasshoppers to some extent, but may not after they have finished the wheat.

WINTER-WHEAT.

The condition of winter-wheat, taking the whole country together, advanced from 87 per cent. of an average, June 1, to 95 per cent. July 1. In New England, Massachusetts is full average and Maine 2 per cent. above. The small crop of this section exhibits a decided improvement in all the States except New Hampshire, which shows a slight decline.

Of the Middle States, Delaware maintains her high June condition, 105. New Jersey lost heavily through local drought, but the large crops of New York and Pennsylvania, by a rapid improvement, have approximated a full average. In some counties of this section the Hessian fly was destructive, but the fine general conditions of the growth not only compensate for losses from this source, but also largely repair the serious damage from winter-killing. Generally, bottom-crops are heavy, while on clay hill-side the stalks are finely headed, though not very thick on the ground. The Fultz wheat still maintains its prestige upon its natal soil. In Lancaster, Pennsylvania, it yielded from 30 to 35 bushels per acre, while other varieties alongside returned only half as much.

Of the South Atlantic States, Maryland alone holds her high June average, 108. Virginia has slightly declined, but still reports 111. The other States all show a serious falling off and are below average, Georgia promising but two-thirds of a crop. In the southern counties of this section frequent rains at a critical stage in the growth of the crop induced rust, while local freshets destroyed a considerable amount of harvested grain. Cherokee, Georgia, reports the Jennings wheat from the Department as a decided success. The Hessian fly was troublesome in a few localities.

Of the Gulf States, all are below average. A small improvement is shown in Mississippi and Texas, but Alabama has fallen to two-thirds of an average through heavy rains producing rust. Several counties report the grain light and poor. In Wilkinson, Mississippi, the Clawson and Jennings wheats rusted badly. The Mediterranean and Walker wheats made fair crops in Cooke, Texas, while other varieties did not average over one-fourth. The fly and rust are noted in several portions of the latter State.

Of the inland Southern States, West Virginia raised her high June condition to 115, and Kentucky raised hers to nearly average, but Tennessee fell below, and Arkansas declined to two-thirds of a crop. The unfavorable conditions here were mostly the same as in the more southern States, rust being produced by untimely rains. Losses of harvested grain by floods add to the disappointment of shortened yields.

North of the Ohio River, Michigan and Illinois are nearly average, and the other States over 80. This region has shown a marked improvement during June, as a whole, only Michigan showing a slight falling

off. The conditions of growth were very favorable in many localities, but the injuries from winter-killing were too extensive to be easily repaired. The midge, in some counties, added its annoyance to the greater injury of the rust. The fly was also injurious in a few places, and the chinch appeared in one or two counties of Illinois.

West of the Mississippi River the crop prospects improved in all the States except Nebraska, which held its high June condition of 110. Missouri and Kansas rose above average, while Minnesota and Iowa remained below. Osage, Missouri, reports drilled wheat as 50 per cent., and Sedgwick, Kansas, 100 per cent., better than broadcast. The Hessian fly and chinch did some local damage, while heavy rains in some quarters produced rust. In Ellis, Kansas, very early-sown wheat produced a fine crop; later-sown did poorly.

The Pacific States are both below average, and both fell off in condition during June. Yet local yields are reported as larger than ever before. Linn, Oregon, complains of excessive wet weather.

NEW YORK.—*Westchester*: Splendid. *Livingston*: Better than last year 25 per cent., but yet below an average crop. *Genesee*: Has done well where not winter-killed.

NEW JERSEY.—*Warren*: Not more than half a crop.

PENNSYLVANIA.—*Cameron*: Best prospect for years. *Perry*: Badly injured by the fly. *Snyder*: Being cut in the stem by the Hessian fly. *Clearfield*: Will be light. *Indiana*: Better than anticipated; well filled. *York*: Large crop. *Armstrong*: Better than was expected the first of June. *Bearer*: Not a full crop, but plump berry. *Lehigh*: Injured by the Hessian fly. *Westmoreland*: Prospect of a very large crop of very fine quality, though somewhat rusted. *Bedford*: Very good in the northern part of the county. *Bucks*: Improved wonderfully; deficiency from winter-killing will be made up by extra yield. *Lancaster*: Pretty good, though some fields much injured by the fly. The Fultz proves to be by far the best variety. It will yield 30 to 35 bushels per acre where other varieties will yield only half of that amount. It is less injured by the fly. *Union*: Much of it in the shock, and a good crop throughout the county. *Clinton*: Injured by Hessian fly. *Lycoming*: On bottoms, very heavy and good; on clay lands, thin but fine heads. *Elk*: Promise of the largest aggregate yield ever raised.

MARYLAND.—*Caroline*: Never such a crop before. *Worcester*: Very good. *Hanover*: About all cut; heads well filled and grain plump. *Talbot*: Shriveled by premature ripening. *Wicomico*: Being harvested; free from rust and injury from damp weather. *Washington*: All gathered, and will turn out well.

VIRGINIA.—*Cumberland*: The harvest over, and a bountiful crop. *Loudoun*: Injured by the fly. *Madison*: Good in quality, but 25 per cent. short, owing to fly and rust. *Russell*: Some damaged by the fly. *Warwick*: Harvested; the grain shrunk from rust on the blade. *Chesterfield*: Best crop for ten years; all harvested in good condition. *Powhatan*: Not so well filled. *Fluvanna*: Good. *Lunenburgh*: Harvested, and the yield good. *Middlesex*: All harvested, with a yield above average. *Page*: Have had fine weather for securing the crop, now all in the shock, and very good in quantity and quality. *Prince William*: Some injury by Hessian fly; quality better than anticipated. *Spotsylvania*: Did not fill as well as anticipated. *Campbell*: Excellent. *Dinwiddie*: All harvested, and the best crop for ten years. *James City*: In the shock, and growers well pleased with the result. *King and Queen*: Very fine. *Pulaski*: On uplands, thin but excellent in quality; on low lands, affected with rust, and nearly all fields more or less with scab. *Smyth*: An extraordinary crop; now in the midst of harvesting. *Elizabeth City*: Being harvested; in fine condition. *Halifax*: Splendid season for securing the crop, which promises well in yield and quality. *Augusta*: Better than usual. *Highland*: Never better. *Mecklenburgh*: Good yield of fine quality.

NORTH CAROLINA.—*Pasquotank*: Promises well. *Wilkes*: Cut short by rust and spot. *Caldwell*: Much destroyed by overflow and injury from rains. *Gaston*: A week of cloudy and rainy weather in harvest has reduced the condition from 100 to 60. *Wilson*: The best crop for years. *Duplin*: Better than ever known. *Nash*: Harvested, and very good. *Pamlico*: For the first time in many years a few bushels of winter-wheat were sown, and the yield was very good. *Perquimans*: Harvested; the best for years. *Rowan*: A freshet in the Yadkin River carried away several thousand bushels of wheat in the shock. *Camden*: A good crop housed. *Hertford*: The best crop since the war; increased quantity, and the grain perfect. *Alexander*: Injured by rust. *Burke*: Reduced 25 per cent. by overflows. *Polk*: Injured by rust, and 25 per cent. lost by rains.

SOUTH CAROLINA.—*Clarendon*: Harvested; much complaint of rust. *Chester*: Dam-

aged 10 per cent. by excessive rain for six days. *Newberry*: Continuous rain for six days has caused wheat to sprout. *Lexington*: Much of it, cut and left in the field, sprouted during the wet spell. *Spartanburgh*: Much injured by rust, and by rains in harvest. *Orangeburgh*: Harvested; 10 per cent. above average. *Marion*: Superior yield and quality. One farmer produced 26 bushels per acre.

GEORGIA.—*Dooly*: Housed, and the finest yield since the war. *Elbert*: Continued rains for a week in harvest have injured the crop. *Gordon*: Not over 3 bushels per acre; injured by fly and rust. *Fannin*: Early, fine; late, infected by millions of lice. *Towns*: Best for years. *Troup*: Housed; crop short. *Upson*: Long straw, but dwarfed grain; injured by red mold. *Gwinnett*: Injured by rust 33 per cent. or more. *Baldwin*: An acreage of 150 harvested; the berry in some localities smaller than usual. *Butts*: Reduced to 60 by fly and rust. *Cherokee*: Almost a failure, but the Jennings wheat from the Department did well. *Clayton*: Reduced to 50 by fly and blade-rust. *Hancock*: Very fine. *Henry*: Half a crop. *Randolph*: Very good crop harvested. *Richmond*: The bulk of the crop damaged by the excessive rains. *Union*: In the midst of harvest; much smut in it; think the yield will be above average. *Coweta*: Injured by blade-rust 45 per cent. *Jefferson*: Unusually large and good crop. *McDuffie*: Better than last year. *Cobb*: Harvested, and almost a failure from rust and fly. *Walton*: Generally thrashed; not over half a crop. *Hart*: Harvested a good crop. *Jackson*: Hardly 25 per cent. of a crop. *Lincoln*: Large individual losses by the flood sweeping off the shocks from bottoms, and considerable damage by sprouting in the shock. *Fulton*: Badly damaged by rust. *Carroll*: Cut short by fly and rust.

ALABAMA.—*Chambers*: The estimate of 100, June 1, proved by thrashing to be 25 per cent. too high; rust. *Crenshaw*: Good. *Calhoun*: Being thrashed, and not nearly as good as anticipated. *Lauderdale*: Much damaged by rust and wet weather. *Blount*: Reduced by rust more than half in quantity, and the quality poor. *De Kalb*: Some has been thrashed, and makes a poor yield of sorry grain. *Cherokee*: Thrashed; yield light and quality poor.

MISSISSIPPI.—*Grenada*: The white winter-wheat from the Department has done well; all other kinds a failure from rust. *Wilkinson*: Clawson and Jennings wheat both rusted badly. *Covington*: All ruined by rust.

LOUISIANA.—*Jackson*: Cut short by rust.

TEXAS.—*Bexar*: Thrashed; yield 10 bushels per acre; grain plump. *Cooke*: All varieties, except Mediterranean and Walker, reduced by rust to 25 per cent. of a crop. *Coryell*: The average 25 per cent. above and the yield 25 per cent. below last year. *Upshur*: Harvested; yield 10 per cent. more than last year. *Bandera*: Being thrashed; better than anticipated. Touzelle makes over 30 bushels per acre, and for seed is selling at \$3, while other wheat sells at \$1.20. *Williamson*: Cut short by rust. *Caldwell*: The acreage 150 but the yield only 50, owing to drought in March and April. *Medina*: Curtailed by a drought of two and a half months. *Red River*: Rusted badly. *Burleson*: Harvested; yield 18 bushels per acre. *Collin*: Damaged by rust and Hessian fly. *Dallas*: Yield per acre short, but the acreage increased. *Gillespie*: Injured by late frost and drought. *Titus*: Half destroyed by rust. *Fannin*: About 11 bushels per acre. *Travis*: Rusted.

TENNESSEE.—*Bedford*: Being thrashed in fine condition; quality good. *Bradley*: Being damaged in the shock. *Giles*: Thrashed; falling off in yield, but acreage larger than ever before. *Meigs*: Considerably damaged by rust. *Robertson*: Fine; grain good. *Dickson*: Thrashing just commenced; will not turn out as well as last year. The grain is good. *Polk*: Cut short by rust. *Greene*: Somewhat injured with scab or smut. *Rutherford*: The yield not good as last year, but the quality never better. *Sequatchie*: Badly injured by rust, spot, and smut. *Trousdale*: The heads light and not well filled.

WEST VIRGINIA.—*Pocahontas*: Good. *Berkeley*: Best for eight or ten years. *Braxton*: Very good; well filled. *Grant*: One of the largest crops ever gathered, now being harvested. *Greenbrier*: Unusually fine. *Pendleton*: Very good. *Putnam*: A condition much above average being reduced by excessive rains in harvest. *Jackson*: In the midst of harvest; favorable reports. *Cabell*: The grain fine; some fields injured by joint-worm and rust. *Monroe*: Being harvested; grain-crop of excellent quality. *Wetzel*: Being harvested in good condition. *Doddridge*: Half harvested; more than an average crop.

KENTUCKY.—*Pendleton*: Thin on the ground, but the grain well matured. *Spencer*: Fine quality, but short yield. *Webster*: Endangered by rains in harvest. *Bath*: All harvested, in good condition; quality extra. *Mason*: Thin and short straw; but the heads large and well filled. *Metcalfe*: Never better. *Russell*: All cut, and splendid. *Warren*: Yield and quality much better than usual. *Shelby*: Thin stands, but good heads. *Lewis*: About 67 per cent. harvested, with satisfactory results. *Hardin*: About half a crop. *Callaway*: Damaged by heavy rains in June; much sprouted before being cut.

OHIO.—*Adams*: Thin, but well filled and of fine quality. *Delaware*: What was left is coming out very well. *Fairfield*: That which stood the freezes, well filled, and of fine

quality. *Geauga*: Has improved very much. *Perry*: Thin, but very well filled; Fultz and Clawson the best varieties. *Shelby*: Fine condition, but only half crop. *Tinton*: Thin and short, but plump berry. *Washington*: Some very excellent crops. *Wood*: The crop will be small, but the berry plump. *Coshocton*: About all in the shock in good condition. *Lucas*: Late wheat badly rusted. *Sandusky*: Better than was expected; will be half a crop. *Muskingum*: In the midst of harvest, and heavy rains almost daily. *Mercer*: Above average in quality.

ARKANSAS.—*Boone*: Badly damaged by the fly. *Cross*: Damaged by rains. *Saint Francis*: Considerable rust. *Baxter*: Harvested; half a crop. *Crawford*: Suffered from rain during harvest. *Yell*: Damaged by rust. *Clay*: Injured by rust. *Franklin*: Harvested; below average in yield, but made up by increased acreage. *Prairie*: The Jennings white wheat the best we ever had. *Izard*: Now in the shock; will make a very small yield. *Fulton*: Very indifferent. *Johnson*: Injured by rain in harvest and shock. *Marion*: Rusted badly.

TENNESSEE.—*Anderson*: Damaged by rust. *Decatur*: Damaged by rust. *Lincoln*: Twenty-five or 30 per cent. was sown unusually late and is much damaged by rust, yet the entire crop will fall very little below average. *Blount*: Not more than half a crop, owing to rust and spot. *Gibson*: Injured by rust and wet weather. *Henry*: Harvested in fair condition. *Johnson*: More than half harvested; the best for years. *Loudon*: Badly damaged by rust. *Monroe*: Damaged by rust, and in the shock by rains. *Smith*: Not more than 75 per cent. of a crop. *Sullivan*: Harvested in good condition; some smut. *Knox*: Injured by rust and by rain for the last ten days; many shocks on the bottoms washed off. *Sevier*: Early sown, very good; late, injured with spot.

MICHIGAN.—*Montcalm*: Heavy straw, but many fields badly injured by rust. *Wayne*: Beginning to rust. *Grand Traverse*: Some injured by the fly. *Hillsdale*: All not winter-killed looks well. *Ionia*: The midge and wet weather doing much damage. *Leelanau*: Never more promising. *Midland*: Never looked better. *Allegan*: The Clawson and Fultz wheats look splendid, and do not rust as other varieties do. *Barry*: Rusting. *Mason*: Looks very well. *Newaygo*: Looks very slim. *Mecosta*: Retarded by excessive rains.

INDIANA.—*Brown*: Thin, but the grain good. *Decatur*: The crop very light, but the grain good. *Steuben*: Has improved wonderfully. *Switzerland*: Thin stand, but quality never better. *De Kalb*: The weevil in smooth wheat will reduce the crop 25 per cent. *Howard*: Some fields entirely destroyed by the midge. *Bartholomew*: The crop, unpromising April 1, turns out almost a full average in quantity and quality. *Carroll*: In the midst of harvest, and the wet weather threatens to ruin the crop. *Fayette*: A thin stand in many fields, but the quality is good. *Floyd*: If not injured by rains in securing, the finest for fifteen years. *Gibson*: Endangered in the shock by continual rains. *Hamilton*: Not over half a crop; the weevil has destroyed 25 to 33 per cent.; good in quality. *Hendricks*: Cannot be cut owing to rains. *Kosciusko*: Harvesting, and it will be bad for the crop if the rains continue. *Martin*: Harvesting under great difficulties, as it rains nearly every day. *Morgan*: Fultz wheat does remarkably well. *Noble*: Not more than half a crop. *Orange*: All cut and in the shock. *Pike*: Fear of injury from the continual rains. *Wabash*: The weevil, in all parts of the county, will destroy 25 per cent. of the crop; the Fultz wheat appears to be weevil-proof. *Washington*: Some very thin stands, but all well headed and good grain; all in the shock, but very unfavorable weather for stacking. *Warren*: Ready for harvest, but too much rain. *Wells*: Light crop but plump berry; the weevil doing some damage, but not serious. *Clarke*: Excellent in quality. *Johnson*: Sprouting.

ILLINOIS.—*Clinton*: Very little stacking done; too much rain. *Crawford*: Spoiling in the shock. *Effingham*: Light crops, but good in quality. *Jersey*: Good in yield and quality; the finest crop since 1864. *Marion*: But little on the ground, and that badly injured. *Menard*: Best crop for many years. *Sangamon*: Spoiling in the shock. *Saint Clair*: Harvested in fine condition; the kernel very good. *White*: The quality very good, but the rains are spoiling it. *Williamson*: In the shock; the yield better than last year, but the rains threaten ruin. *Mason*: Good. *Perry*: Thin stand, but good, plump grain; in the shock, and in danger from excessive rains. *Madison*: Heavy and of good quality. *Pulaski*: Great improvement in the ripening season; all in the shock. *Monroe*: Sprouting in the shock; considerable destroyed by the overflow of the Mississippi. *Montgomery*: Thin stand, but fine, plump grain; in danger from wet weather.

WISCONSIN.—*Richland*: Badly winter-killed. *Walworth*: Largely winter-killed. *Washington*: Rust.

MISSOURI.—*Cass*: The best crop for many years. *Phelps*: Light crop; Hessian fly injured it in localities. *Barton*: Fine. *Osage*: That put in with the drill, 50 per cent. above average; that sown broadcast, 50 per cent. below. *Chariton*: Injured by continuous rains. *Caldwell*: Ready to cut, but we cannot get into the fields with reaping-machines. *Daviess*: Very fair crop. *Douglas*: Badly damaged with the bug and fly; Fultz wheat the best in the county. *Franklin*: Will sprout unless the rain soon

ceases. *Jasper*: Mostly harvested; extra large fields and extra quality. *Jefferson*: Badly rusted. *Johnson*: The fields wet and miry. *McDonald*: Thin stand, but good grain. *Pettis*: In the shock, and endangered by rains. *Platte*: The yield above 20 bushels per acre, and the grain full and plump. *Ralls*: Never better. *Ripley*: Endangered in the shock. *Saint Charles*: Damaged by rust on bottom-lands. *Stone*: Badly damaged by rust, spot, and blight. *Clay*: Fine, but endangered by rains. *Dent*: Materially damaged by the heavy rains; much washed away. *Grundy*: Looks well. *Perry*: Thin stand, but good, plump berry; in the shock and sprouting badly.

KANSAS.—*Saline*: Damaged by a green worm when heading in June. *Sedgwick*: Drilled yields double that sown broadcast. *Bourbon*: In the shock in good order; the Jennings and Minorca wheat from the Department promise well; less affected by rust than other kinds. *Chase*: A worm has been eating the heads to some extent; grain light, and of inferior quality. *Elk*: Greatly injured by much rain and high water. *Franklin*: In the shock. *Jackson*: Never better; will be more in the county than ever before, if not injured in the shock. *Lafayette*: Badly affected with rust and scab; threatened with sprouting in the shock. *Lyon*: Rusted to some extent. *Miami*: Cut; very fine. *Montgomery*: Not so well filled as expected, owing to wet weather; some crops ten feet under water at the time of heading. *Cherokee*: Injured by rust and the Hessian fly. *Ellis*: That sown in August or early in September has made a good crop; but most of it was sown later, owing to the difficulty of procuring seed, and did not sprout till spring. *Nesho*: Injured by rust and fly, and being damaged in the shock. *Reno*: All cut; not as heavy as expected. *Wabaunsee*: The best crop ever harvested, in yield and quality.

CALIFORNIA.—*Contra Costa*: Will be the largest crop harvested in this State. *Yuba*: Good, with increase over last year. *Santa Clara*: Promising a fair harvest.

OREGON.—*Linn*: Injured by wet weather.

DAKOTA.—*Davison*: Suffered from drought; with deep plowing, and drilled five or six inches deep, does well. *Buffalo*: Suffering from severe drought.

MONTANA.—*Jefferson*: Will be greatly reduced by grasshoppers.

NEW MEXICO.—*Taos*: Half destroyed already by grasshoppers.

SPRING-WHEAT.

This crop, according to our July returns, shows about 85 per cent. of an average condition. It has improved or held its own since June 1 in all the New England States except Connecticut. In New York it improved to full average, while in Pennsylvania it fell below. The culture of spring-wheat is reported at several points in the South, but it is of too inconsiderable importance to attract statistical inquiry. In the States north of the Ohio River it has fallen off, as also in the States west of the Mississippi, except Kansas, in which it has considerably advanced. Highland, Ohio, reports the Odessa as the most promising spring-wheat ever sown in that county. Several counties complain of chinch-bugs, others of excessive rains, and still others of drought. The grasshopper and Hessian fly also did some local injury. On the Pacific coast late rains have improved the crop, which is above average in California, and nearly average in Oregon. Reports from the Territories show the ravages of grasshoppers in several sections.

MAINE.—*Oxford*: Looking well. *Cumberland*: Promising.

VERMONT.—*Caledonia*: Looking well.

TEXAS.—*Gillespie*: Injured by late frost and drought; not more than 3 or 4 bushels per acre.

TENNESSEE.—*Monroe*: Almost ruined by rust.

OHIO.—*Delaware*: Never better. *Highland*: The Odessa wheat promises better than any other variety ever introduced here.

MICHIGAN.—*Emmet*: Looks very fine. *Iosco*: Greatly increased acreage. *Leelanau*: Never more promising. *Mason*: Looks very well.

ILLINOIS.—*Ogle*: Injured by chinch bugs. *Putman*: Almost ruined by rust. *Schuyler*: Good growth, but badly rusted. *Winnebago*: Very poor. *Mason*: Poor. *Carroll*: Thin stands and sickly appearance. *Lee*: Thin and light stands.

WISCONSIN.—*Dunn*: Spring sowing delayed by excessive rains. *Dodge*: Crops look well. *Douglas*: Seeding delayed by cold spring. *Grant*: Threatened by chinch bugs. *Outagamie*: Looks well; abundant rains; bottom crops inundated, but high-land crops greatly benefited by the abundant rains. *Walworth*: Injured by chinch bugs. *Monroe*: Small grain, fine. *Washington*: Injured by chinch bugs. *Green*: Chinch bugs bad.

MINNESOTA.—*Blue Earth*: Injured by extreme hot and dry weather; red rust prevailing. *Fillmore*: More rain of late, but the effects of drought still visible. *Lyon*: Drought, but rain at last. *McLeod*: Thinned and shortened by drought on old land; on new land, deep plowed, the crop is abundant. *Mower*: Great improvement in ten days; crop three-fourths average; good rains of late. *Sibley*: Crop the best yet raised here. *Steele*: Irregular; injured by May freshets and subsequent drought. *Wabasha*: Injured by heavy rains following drought; wheat stooled but little, and is now very thin. *Waseca*: Shortened by drought; some reports of Hessian fly. *Watsonian*: Grasshoppers, Hessian fly, and drought injurious. *Winona*: Thin, but looks well. *Redwood*: Damaged by drought and grasshoppers; half crop. *Stearns*: Crop, average. *Wright*: Good on prairie, but injured on timber-land by drought. *Meeker*: Greatly injured by drought. *Faribault*: Injured by heat and drought. *Goodhue*: Outlook not flattering, especially old fields.

IOWA.—*Cherokee*: Saved by late rains. *Clinton*: Many fields very thin; not worth harvesting. *Des Moines*: Too much rain. *Hancock*: Continued drought in May very injurious; some reports of Hessian flies. *Hardin*: Some unknown influence for evil. *Howard*: Something unknown operating against the crop. *Humboldt*: Generally poor. *Jackson*: Injured by fly, chinch, and rust. *Johnson*: Thin crop from imperfect seed, and chinches. *Madison*: Injured by drought. *Mahaska*: Looks very badly; poor seed and other causes. *Marion*: Unpromising; chinches, rust, and blight. Much of it has been plowed up. *Marshall*: Puny, but improving; not stalks enough for over half a crop. *Mitchell*: Half crop; rust and fly. *Tama*: Very thin, and some turning yellow; fly at work at the joints. *Franklin*: Injured by drought. *Audubon*: Drought very destructive. *Clay*: A few fields injured by the fly. *Jefferson*: Scarce worth harvesting. *Monona*: Serious injury from drought. *O'Brien*: Extremely dry. *Washington*: Looks bad. *Woodbury*: Looks very fine.

KANSAS.—*Chase*: Improved 15 per cent. in June. *Lincoln*: Drying up, and plenty of chinches working on it. *Republic*: Very weedy.

NEBRASKA.—*Cuming*: Short straw, but healthy, and a prospect of a good yield. *Lancaster*: That sowed previous to April 20 is in splendid condition. *Stanton*: Injured by smut. *Antelope*: Good, but the weather too dry. *Dodge*: Recent rains will insure a crop of good quality, though not average in yield. *Platte*: Short straw, but the yield may be greater than last year. *Douglas*: Thin stand and short straw, owing to early dry weather.

CALIFORNIA.—*Yuba*: Much better than usual, owing to late rains.

OREGON.—*Linn*: Splendid. *Clackamas*: Looks well considering the lateness of the sowing.

DAKOTA.—*Hanson*: Suffering from drought. *Richland*: Cut off 50 per cent. by long drought and young grasshoppers.

MONTANA.—*Jefferson*: Will be greatly reduced by grasshoppers.

NEW MEXICO.—*Taos*: Half destroyed already by grasshoppers. *San Miguel*: Owing to ravages of grasshoppers a great deal has been plowed up and planted with corn. All kinds of insects bad, owing to the dry weather.

RYE.

Winter-rye is full average in New England as a whole, and spring-rye somewhat above. The Middle States cultivate but little spring-rye. The winter-grain improved during June, though drought in New Jersey still leaves its impress upon the crop. In the Southern States only winter-rye is raised, and that in no large quantity. The South Atlantic States are about average, and the Gulf States considerably below. In the southern inland States winter-rye ranges from 83 in Arkansas to 109 in West Virginia, Tennessee, and Kentucky, being nearly average. North of the Ohio River spring-rye re-appears in increasing quantities, and is above average in Michigan and Wisconsin, but considerably below in the other States. Winter-rye is above average in Michigan, and below in all the other States. West of the Mississippi River, in Minnesota and Iowa winter-rye is below average and in the other States above. In the southern portions of this section rains are reported as injuring the standing crops with rust, and as spoiling the harvested crops in the shock. Spring-rye is about average on the whole. The crop is about average on the Pacific coast.

NEW YORK.—*Westchester*: Splendid. *Saratoga*: Very irregular, and heads small. *Washington*: Winter-rye never poorer; spring, average.

PENNSYLVANIA.—*Indiana*: Good. *York*: Large crop. *Bedford*: Very good in the northern part.

MARYLAND.—*Caroline*: Well filled.

VIRGINIA.—*Madison*: Very good. *Highland*: Never better.

SOUTH CAROLINA.—*Orangeburgh*: Harvested; 110.

GEORGIA.—*Towns*: Best for years.

ALABAMA.—*Lauderdale*: Almost a failure.

TEXAS.—*Medina*: Curtailed by a drought of two and a half months.

ARKANSAS.—*Izard*: Now in the shock; will make a small yield.

WEST VIRGINIA.—*Pendleton*: Very good.

KENTUCKY.—*Spencer*: Short yield but fine quality. *Mason*: Increased acreage and very fine.

MICHIGAN.—*Mason*: Looks very well.

INDIANA.—*Martin*: Endangered by rains in harvest.

ILLINOIS.—*Sangamon*: Spoiling in the shock. *Mason*: Looks well.

MISSOURI.—*Cass*: The best crop for many years. *Caldwell*: Ready to cut, but we cannot get into the fields for wet. *Clay*: Fine, but endangered by rains.

KANSAS.—*Jackson*: Never better.

OATS.

The oats-crop improved during June in most of the States. Rhode Island reports a large falling off, but this is more than counterbalanced by the large increase in the other New England States. The drought injured the crop in some localities during the latter half of June. The Middle States have risen above average, except Delaware, in which the previous low June condition was still further reduced. The South Atlantic States, except Maryland and Georgia, fell off during June, but the condition of the whole is considerably above average. The Gulf States about held their own, and are a little above average. Of the Southern inland States, all except Arkansas report an improved condition, yet they are still below the average. The States north of the Ohio River all improved during June, and are a full average on the whole. West of the Mississippi River, Kansas shows a marked improvement, reaching 108, but all the other States of this section declined in condition and are below average. The Pacific States are above average, California having maintained her June condition, and Oregon having improved hers. It will be observed from the following notes that public opinion in the South is settling down decidedly in favor of winter-crops of oats. In some parts of the Northwest rust affected the crops of some counties.

The crop of the whole country, taken together, is about average.

MAINE.—*Oxford*: Promise well.

VERMONT.—*Caledonia*: Looking well.

MASSACHUSETTS.—*Bristol*: Somewhat injured by dry weather in the latter half of June.

NEW YORK.—*Albany*: Very good. *Otsego*: Looks finely. *Genesee*: Somewhat injured by drought. *Saratoga*: The early-sown doing finely. *Oswego*: Better than usual. *Erie*: Need rain badly.

NEW JERSEY.—*Warren*: Suffering for the want of rain.

PENNSYLVANIA.—*Perry*: Prospect of full crop. *Indiana*: Doing finely. *Armstrong*: Late, and somewhat injured by drought the last of May. *Beaver*: Have suffered from drought. *Union*: Looks well. *Elk*: Splendid.

MARYLAND.—*Caroline*: Looks well. *Howard*: Unusually good. *Wicomico*: A good crop on high land; on low land, thin, but of good quality. *Baltimore*: Fine; another rain will make a heavy yield.

VIRGINIA.—*Caroline*: Favorable season. *Madison*: Better than usual. *Warwick*: A good crop of winter-oats harvested; spring-oats much injured by rust. *Chesterfield*: Spring-oats very poor. *Powhatan*: Winter-oats exceedingly heavy; spring-oats scarcely worth reaping. *Fluvanna*: Very poor. *King George*: Have risen from a most unpromising condition to a full crop. *Orange*: Have suffered from drought. *Prince William*: Thin stands, but the heads large and well filled. *Spotsylvania*: Promise well. *Campbell*: Very inferior. *James City*: Fall-oats first rate; spring came up badly, but have branched unusually well. *King and Queen*: Very fine. *Prince Edward*: The crop will

be somewhat shortened by the dry weather. *Halifax*: Fall-oats poor; spring injured by frost and rust. *Charles City*: Fall-oats good; spring destroyed by frost and drought. *Highland*: Never better. *Narthampton*: Seriously injured by fly and rust.

NORTH CAROLINA.—*Alamance*: Winter-oats good, but spring-oats bring the whole crop below an average. *Wilson*: Winter, good; spring, medium. *Camden*: A good crop housed. *Dariv*: Thin, owing to cold weather in March. *Hertford*: Spring-oats injured by rust. *Caldwell*: Injured by excessive rains.

SOUTH CAROLINA.—*Clarendon*: A heavy yield; all harvested in good condition. *Chester*: Damaged 10 per cent. by excessive rain for six days. *Newberry*: The yield abundant, and most of the crop has been harvested without damage. *Lexington*: Never better; housed in good condition. *Orangeburgh*: Harvested; 130. *Laurens*: The best for ten years.

GEORGIA.—*Dooly*: Large acreage, and the best yield ever known. *Elbert*: Continued rains for a week in harvest have injured the crop. *Gordon*: Fall-oats extra good. *Marion*: Never better. *Thomas*: Good, and housed in good condition. *Troup*: Fall-oats fine; spring, a total failure from rust. *Upson*: The finest ever grown. *Worth*: A large acreage harvested, and the best crop ever seen. *Gwinnett*: Fall, above average; spring, injured by rust 33 per cent. or more. *Baldwin*: The acreage estimated by good judges at 400, and the condition 150. *Cherokee*: The Holstein oats from the Department made a fine yield. *Clayton*: Both fall and spring very good, though somewhat injured by rust. *Columbia*: Becoming a drug in the market. *Hancock*: Very fine. *Henry*: Good. *Randolph*: Very good crop harvested. *Richmond*: Fully 125 in acreage and 125 in condition, but injured by the excessive rains. *Coweta*: Fall-oats are good, especially red rust-proof. One farmer made 115 bushels on one acre; another, 377 bushels on seven acres; and a yield of 60 to 90 bushels per acre is common. *Jefferson*: Unusually large and good crop. *McDuffie*: The best crop in quantity and quality ever raised in Georgia by far. *Cobb*: Harvested; fall-oats, the best ever raised; spring, almost a failure from rust. *Walton*: Both winter and spring oats excellent. *Wilcox*: All housed and a good yield. *Jackson*: A good crop. *Lincoln*: Large individual losses by the flood sweeping off the stacks from the bottoms, and considerable damage by sprouting in the shock. *Fulton*: Slightly damaged by rust, but full quantity, owing to increased acreage.

FLORIDA.—*Madison*: More planted than ever before, and never better. *Leon*: All housed, and a splendid yield. *Gadsden*: Increased acreage harvested in good condition, and the yield considerably above average.

ALABAMA.—*Greene*: Rusted badly. *Crenshaw*: All rust-proof oats good. *Calhoun*: Very fine. *Barbour*: Spring oats generally a failure, but owing to the large area of winter rust-proof, the yield is good. *Lauderdale*: Heavy and good. *De Kalb*: Materially damaged by rust, the rust-proof only escaping.

MISSISSIPPI.—*Grenada*: The Holstein oats from the Department suffered a little from rust, but will make a fine yield. *Perry*: Not over half a crop, owing to rust and a cold spring. *Clarke*: Harvested, and a very good yield. *Cherokee*: Have done well. *Lincoln*: Housed in good condition; decreased yield made up by increase in acreage. *Winston*: The Holstein oats a failure; the rust took them and they fell down.

TEXAS.—Harvested, and a heavy yield. *Panola*: Spring oats nearly all ruined by rust. Fall oats, rust-proof, very fine; all harvested. *Upshur*: Harvested; 25 per cent. above last year. *Williamson*: Large acreage, immense yield, and good quality. *Caldwell*: Acreage 200 and yield 150. *Medina*: Curtailed by a drought of two and a half months. *Red River*: Rusted badly. *Burleson*: Yield good—as high as 75 bushels per acre; average 40 bushels. *Collin*: Damaged by rust. *Dallas*: Harvested; 40 bushels per acre. *Smith*: Rains favorable for the crops. *Shelby*: Badly damaged by rust; the red oats average. *Titus*: Acreage large, and the yield never better; red rust-proof sown. *Bexar*: Will average 40 bushels per acre. *Burnet*: Rusted. *Cooke*: Whole fields ruined by flood. *Fannin*: About 60 bushels per acre.

ARKANSAS.—*Boone*: Badly damaged by rust. *Cross*: Damaged by rains. *Saint Francis*: Rusted to some extent. *Baxter*: Not quite as good as last year. *Crauford*: Injured by early drought. *Yell*: Damaged by rust. *Clay*: Injured by rust. *Franklin*: Injured by rust. *Bradley*: Red, rust-proof, a fair yield; all other kinds almost worthless from rust. *Izard*: Better than wheat and rye. *Fulton*: Early-sown, good; late, injured by rust. *Marion*: Rusted badly.

TENNESSEE.—*Decatur*: Some rust. *Blount*: Rust threatens a failure. *Monroe*: Good. *James*: A large and good crop raised and cut. *Bradley*: Injured by rain in harvest. *Giles*: Being cut; unusually good. *Meigs*: Nearly ruined by rust. *Robertson*: Low, and injured by rust. *Macon*: Injured by rust. *Greene*: Fall oats splendid; spring, not good.

WEST VIRGINIA.—*Tucker*: Will be short, owing to drought. *Pocahontas*: Fine prospect. *Monroe*: Better than for many years. *Wetzel*: Materially injured by dry weather. *Doddridge*: Not more than half a crop.

KENTUCKY.—*Ohio*: Almost ruined by rust. *Pendleton*: Not good. *Taylor*: Taking rust. *Bath*: Decidedly improved by rains. *Mason*: Have improved wonderfully un-

der showers, and promise a good crop. *Owsley*: Rusted badly. *Russell*: Destroyed by rust. *Shelby*: Show good heads, but many fields too short to cut, owing to drought. *Lewis*: Short in stem but plump. *Hardin*: Some rust.

OHIO.—*Adams*: Very short; many fields will not make half a crop. *Lorain*: A large growth, and early. *Perry*: Quite short; early spring, very dry. *Lucas*: Being injured by wet weather. *Hancock*: Overgrown.

MICHIGAN.—*Wexford*: Early-sown never so good. *Calhoun*: Very luxuriant. *Emmett*: Look very fine. *Iosco*: Greatly increased acreage. *Barry*: Rusting. *Tuscola*: Looking splendid. *Mecosta*: Retarded by excessive rains.

INDIANA.—*Brown*: Rusting badly. *Decatur*: Tall and heavy. *Fayette*: Slightly affected with rust. *Hamilton*: A large crop, looking finely. *Martin*: Rusted badly, and threatened with ruin by rain in harvest. *Noble*: Good. *Clark*: Short stalk, but well headed.

ILLINOIS.—*Crawford*: Rusting. *Effingham*: Damaged by too much rain. *Saint Clair*: Good. *Mason*: Look well. *Madison*: Rather short, and affected by rust.

MINNESOTA.—*Sibley*: Finest crop yet raised. *Wright*: Short, and rusting.

MISSOURI.—*Chariton*: Suffered from early drought. *Carter*: In many places will be worthless from rust. *Douglas*: Badly damaged by rust. *Jasper*: Badly killed with rust. *McDonald*: Injured by rust. *Mississippi*: Very much damaged by the continued rains. *Pettis*: Not nearly so heavy as last year. *Ralls*: Short. *Saint Charles*: Very short, owing to drought in May. *Stone*: Nearly destroyed by rust. *Clay*: Fine, but endangered by rains. *Maries*: Thin, and symptoms of rust. *Perry*: Look well, but threatened with rust.

KANSAS.—*Bourbon*: Look well, except that they are badly rusted. *Chase*: Extra. *Labette*: Thin and short; too much rain. *Lyon*: Rusted to some extent. *Wabaunsee*: Never any crop like it seen in this section; many fields are estimated to yield 75 bushels per acre.

NEBRASKA.—*Antelope*: Good, but too dry weather.

OREGON.—*Clackamas*: Considering the lateness of sowing, look well.

DAKOTA.—*Davison*: Suffered from drought. *Buffalo*: Suffering from severe drought. *Harrison*: Suffered from drought.

MONTANA.—*Jefferson*: Are taking the place of wheat.

NEW MEXICO.—*Taos*: The crop has escaped the grasshopper to some extent; but it is doubtful if it will, after they have finished the wheat.

BARLEY.

Winter-barley is grown only in the central latitudes to any extent; but small portions are grown in the South; while in the more northern States the spring-growing alone is reported. In New England, New York, Michigan, and Oregon, spring-barley is above average, and in other States within the same parallels it is below. In the belt next southward, Ohio and California are above average, and other States from 1 to 17 per cent. below. Of winter-barley, Texas, Kentucky, Wisconsin, Kansas, Nebraska, and California are above average, and all other States below. Chinches have injured it in some parts of Kansas. In Dakota it appears to stand drought better than either wheat or oats.

NEW YORK.—*Albany*: Very good. *Otsego*: Look finely. *Genesee*: Somewhat injured by drought. *Erie*: Needs rain badly.

PENNSYLVANIA.—*York*: A large crop.

TEXAS.—*Caldwell*: Acreage, 200; yield, 150. *Dallas*: Harvested; 40 bushels per acre. *Fannin*: About 50 bushels per acre.

KENTUCKY.—*Mason*: Very fine, and all harvested in good order.

OHIO.—*Miami*: Mostly harvested in splendid condition.

MICHIGAN.—*Calhoun*: Very luxuriant.

ILLINOIS.—*Ogle*: Injured by chinches. *Winnebago*: Very poor. *Carroll*: Thin stand, and sickly appearance.

MINNESOTA.—*Sibley*: Finest crop yet raised.

KANSAS.—*Lincoln*: Drying up, and plenty of chinches working on it.

CALIFORNIA.—*Contra Costa*: The crop will be the largest harvested in this State. *Yuba*: Has turned out well. *Santa Clara*: A small crop.

DAKOTA.—*Hanson*: Stood the dry weather better than wheat and oats.

PASTURES.

The superior condition of pastures reported the 1st of June is fully maintained. Drought has reduced the average in New Jersey to 85, dry weather in Minnesota to 99, and Rhode Island returns an average of 95; but in all the other States the average ranges from 100 upward—reaching in Arkansas 114; Michigan, 112; Illinois, Wisconsin, and Oregon, 110; Maine, 109; Vermont, Texas, Kentucky, and Ohio, 108; Delaware, North Carolina, and Kansas, 107; West Virginia, Indiana, and Missouri, 106; New Hampshire, New York, Alabama, Louisiana, and Iowa, 105.

MAINE.—*Oxford*: Good.

MASSACHUSETTS.—*Bristol*: Injured by dry weather, except on low lands.

CONNECTICUT.—*New London*: Suffering from dry weather.

NEW YORK.—Not as good as last year. *Westchester*: Suffering from dry weather.

Oneida: Luxuriant. *Suffolk*: Shortened by dry weather.

NEW JERSEY.—*Gloucester*: Injured by severe drought. *Warren*: Very short, from drought.

PENNSYLVANIA.—*Indiana*: Prime. *Armstrong*: Good. *Beaver*: Have suffered from drought.

MARYLAND.—*Caroline*: Never better. *Howard*: Very good.

VIRGINIA.—*Chesterfield*: Short from dry weather. *Orange*: Have suffered from drought. *Dinwiddie*: Drying up. *Charles City*: A severe drought for four weeks has burned up the pastures.

NORTH CAROLINA.—*Haywood*: Better than for many years.

GEORGIA.—*Walton*: Excellent. *Carroll*: Good.

ALABAMA.—*Lauderdale*: Never better.

MISSISSIPPI.—*Perry*: Better than last year 10 per cent. *Jefferson*: Poor; too dry.

LOUISIANA.—*Jackson*: Very superior.

TEXAS.—*Williamson*: Never better; cattle fat. *Red River*: Better than for years. *Bee*: A great many pastures being inclosed, and improved stock being imported from Kentucky and other places. *Dallas*: Very good. *Titus*: Acreage large, and the condition never better. *Washington*: Excellent, and stock of all kinds thrifty and fat. *Travis*: Never better; native grass abundant.

TENNESSEE.—*Gibson*: Never better. *Monroe*: Never better. *Sevier*: Better than ever before. *Bradley*: Never better. *Giles*: Never better. *Polk*: Excellent. *Greene*: Never better.

WEST VIRGINIA.—*Pocahontas*: Thick set and luxuriant. *Braxton*: Very good. *Pendleton*: Never better.

KENTUCKY.—*Spencer*: Heavily covered with white clover. *Russell*: Splendid.

OHIO.—*Ashtabula*: Good; this is a cheese-making county, on the factory system, and a full average will be manufactured. *Lorain*: Excellent. *Portage*: The white clover whitening thousands of acres. *Jackson*: Extra good. *Hancock*: Never better.

MICHIGAN.—*Emmett*: Very fine. *Mason*: Look very well. *Mecosta*: Abundant.

INDIANA.—*Decatur*: Good.

ILLINOIS.—*Hardin*: Never better.

MISSOURI.—*Chariton*: Good. *Stone*: Fine. *Clay*: Good, but not fully restored from the effects of the grasshoppers last year. *Harrison*: Fine.

CALIFORNIA.—*Sonoma*: Better than for twenty-five years.

COLORADO.—*El Paso*: The prairies never looked more promising.

UTAH.—*Morgan*: More pasture on the hills than for many years. *Kane*: Feed on the ranches drying up for want of rain.

MONTANA.—*Jefferson*: Very fine, owing to the wet season.

THE GRASS-CROP.

The clover crop improved during June in nearly all the Atlantic and Gulf coast States, declined in nearly the whole of the Mississippi Valley, and improved on the Pacific slope. Maine, Vermont, Massachusetts, New Jersey, Pennsylvania, Wisconsin, Minnesota, and Iowa are from 1 to 10 per cent. below average, the minimum being in Minnesota. The other States are all above average, the maximum, 111, being in South Carolina and Tennessee. Timothy makes a still more favorable showing. The only States below average are Maine, New Hampshire,

Vermont, Connecticut, New Jersey, Kentucky, Minnesota, and Nebraska, the minimum, 86, being in the last-named State. All the other States are above average, the maximum, 109, being in Oregon. The hay-crops will be ample for the necessities of the year.

MAINE.—*Penobscot*: Will be heavy. *Waldo*: Grass first-rate. *Piscataquis*: Good prospect of a bountiful crop. *Oxford*: Clover winter-killed in many places; timothy seems to suffer from too much moisture. *Franklin*: Very promising. *Cumberland*: Will be abundant.

NEW HAMPSHIRE.—*Hillsborough*: Abundant. *Rockingham*: The prospect not so good as last year.

VERMONT.—*Rutland*: Light. *Caledonia*: Clover badly winter-killed; other grass looking finely. *Orleans*: Indications of a light crop.

CONNECTICUT.—*New London*: Timothy somewhat affected by dry weather.

NEW YORK.—*Dutchess*: Clover and timothy reduced by drought. *Otsego*: Meadows promise well. *Warren*: Will not be average; June, too dry. *Washington*: Timothy never looked poorer. *Suffolk*: Shortened on all old mowing grounds by dry weather. *Erie*: Not as heavy a growth of clover and timothy as last year. *Richland*: Short, owing to dry weather. *Allegany*: A larger crop never seen.

NEW JERSEY.—*Sussex*: Will be a good crop; some already secured in good condition. *Warren*: Clover very short and thin; timothy not as heavy and thick as was anticipated, owing to drought.

PENNSYLVANIA.—*Cameron*: Excellent. *Indiana*: Clover and timothy are all that could be wished. *York*: The early or first crop a good one and now housed. *Armstrong*: Meadows good; growing fast as they can. *Union*: Haymaking nearly over, and a heavier crop than for several years. *Tioga*: The heaviest crop in twenty years. *Elk*: Will be the largest crop in five years.

MARYLAND.—*Caroline*: A large crop of clover and timothy. *Howard*: Clover and timothy very good. *Harford*: Promise of a very good crop. *Baltimore*: A heavy crop of rather coarse clover; hay secured.

VIRGINIA.—*Madison*: Timothy above average and clover better than for many years. *Russell*: Clover, timothy, and other grasses very good. *Chesterfield*: Timothy injured by dry weather through June; clover short, but nicely cured. *Porchaton*: A fine yield of clover and timothy. *Fluvanna*: Clover, timothy, and other grass very good. *Orange*: The hay crop has suffered from drought. *Spotsylvania*: The hay-crop is very large throughout the county. *Campbell*: An abundant hay-crop. *Dinwiddie*: Clover has been seriously affected by the dry weather. *Charles City*: Clover burned up by a severe drought for the past four weeks. *Highland*: The heaviest crop of hay for many years.

NORTH CAROLINA.—*Alamance*: Clover-crop not so good as usual.

SOUTH CAROLINA.—*Laurens*: Much German millet has been sown, and looks luxuriant; clover cut and better than usual.

GEORGIA.—*Baldwin*: Clover and Italian rye-grass barely introduced; both promise well on a small scale. *Walton*: Our farmers are giving grasses some attention and they promise well. *Fulton*: Fine yield of clover.

TEXAS.—*Bowie*: Small patches of clover sown last year are yielding an abundant crop. *Williamson*: Grass never better. Millet and Hungarian grass raised for forage. *Collin*: Alfalfa fine. *Titus*: Acreage of clover, timothy, and blue-grass rapidly increasing and doing finely.

TENNESSEE.—*Lincoln*: The clover-crop never better. *Gibson*: Clover and timothy very luxuriant. *Monroe*: Clover very fine and timothy good. *Rhea*: A good season for grass. *Sullivan*: Clover and timothy excellent. *James*: Clover fine; too much rain for hay-making. *Scrier*: Clover better than ever before. *Bradley*: Clover, timothy, and red-top exceedingly fine. *Greene*: Clover very extra and timothy above average.

WEST VIRGINIA.—*Tucker*: Grass will be short owing to drought. *Pocahontas*: Clover excellent and timothy very good. *Braxton*: Clover and timothy good. *Grant*: Meadows very good. *Pendleton*: Meadows never better. *Monroe*: More grass for hay than grew last year and year before.

KENTUCKY.—*Spencer*: Abundant rains have improved the grass very much. *Russell*: Meadows splendid. *Hardin*: Clover looks well and timothy good but for the white-blossom. *Callaway*: Clover, timothy, and herd's-grass never better.

OHIO.—*Lorain*: Meadows never better. *Portage*: Have not seen meadows, old and new, looking so well in twenty years. *Wood*: About half the clover spoiled on the ground. *Defiance*: The crop of clover cannot be saved owing to excessive rains. *Licking*: Hindered somewhat by rains in saving the crop. *Lucas*: A large growth of clover; some of it rotting, cut and uncut, owing to excessive rains. *Miami*: Grasses of all kinds never so good. *Wayne*: Clover heavy and down. *Hancock*: Clover and timothy superabundant. *Muskingum*: Large quantities of clover mowed and ruined on the ground by heavy rains.

MICHIGAN.—*Wayne*: Much clover cut, but, owing to continuous rains, but little secured in good condition. *Westford*: Clover and timothy never better. *Delta*: Grass extra good. *Lenawee*: Clover heavy and rotting. *Cathoun*: Injured by continuous heavy rains; timothy very luxuriant. *Hillsdale*: Bad time for haying; very wet. *Iosco*: Grass of all kinds trying to overdo itself. *Washtenaw*: Very heavy crop, but too wet to secure it. *Allegan*: Gone past its time for cutting, owing to rain for the past fifteen days. *Barry*: Very wet—bad for saving hay. *Mecosta*: Never better.

INDIANA.—*Lake*: No haying can be done owing to continual rains for three weeks past, and clover, which ought to be cut, is being injured. *Decatur*: Clover is good, but the rains prevent cutting and curing. *Carroll*: The wet weather has already destroyed a considerable portion of the clover-hay. *Dearborn*: The low estimate of timothy, 75, is due to the enormous growth of white-weed. The meadows in this part of the State are white with its blossoms. *Hamilton*: Timothy extra good. *Hendricks*: Clover cannot be cut owing to continued rains. *Kosciusko*: Hundreds of tons of clover will rot on the fields, and more in the stack. *Martin*: Clover and grass cannot be cut for the rains. *Wells*: Impossible to make clover-hay owing to wet weather. *Whitley*: Much rain makes it hard for hay-making.

ILLINOIS.—*Hardin*: Meadows never better. *Menard*: Clover and the grasses are rotting from the effects of wet weather; timothy as fine as ever grew. *Mercer*: Grasses remarkably good. *Saint Clair*: Prospect for a fine crop of grasses never better. *Saint Clair*: Timothy, clover, and other grasses good and plenty; clover never harvested in better condition. *Shelby*: Clover being ruined for want of fair weather to make it.

WISCONSIN.—*Walworth*: Grass-crops largely winter-killed; old meadows light. *Monroe*: Grass-crops fine.

IOWA.—*Clinton*: Grass-crops of all kinds very good. *Mahaska*: Large quantities of Hungarian grass sown, owing to failure of wheat.

MISSOURI.—*Chariton*: Clover and timothy, which suffered from early dry weather, improved by recent rains. *Adair*: Hay-crop will be short, owing to the May drought. *Johnson*: Young clover and timothy look well. Little clover and no timothy escaped the grasshopper last year. *Saint Charles*: Very short, owing to drought in May. *Stone*: Clover and timothy fine. *Clay*: Timothy good, but clover scarce and poor.

KANSAS.—*Douglas*: Grass was never better. *Republic*: Very little clover sown, but that is growing finely.

CALIFORNIA.—*Santa Clara*: The hay-crop is at least 50 per cent. greater than in any former year, and it is chiefly of good quality. *Sonora*: Grass better than for twenty-five years. A vast increase in the acreage of alfalfa.

OREGON.—*Multnomah*: The rainy spring has greatly favored meadows. *Linn*: The hay-crop will be of unusual excellence.

WASHINGTON.—*Thurston*: The hay-crop abundant, but will be injured by rot, being badly lodged.

POTATOES.

The acreage planted in potatoes in 1876 is about 8 per cent. less than in 1875. The States equaling or exceeding last year's acreage are Maine, 100; Delaware, 100; North Carolina, 103; South Carolina, 101; Georgia, 102; Alabama, 101; Texas, 136; Arkansas, 106; Tennessee, 101; Minnesota, 100; Missouri, 125; Kansas, 112; California, 110; Oregon, 108. The greatest reductions were New Jersey, 31 per cent.; New York, 15 per cent.; Rhode Island, 12 per cent.; and Ohio, 11 per cent. The general reduction in the northern and central parts of the Atlantic slope was doubtless due to the visitation of the Colorado beetles. In those States below the range of that pest there has been an increased acreage. In the States north of the Ohio River, and in West Virginia and Kentucky, there has been a general falling off. But in the States west of the Mississippi and on the Pacific slope there has been a marked increase, except in Iowa and Nebraska, which have somewhat reduced their acreage.

The condition of the crop does not present as marked variations as in former years. The highest State average, 107, is in Georgia, and the lowest, 84, is in Louisiana. New Jersey, 87, is especially troubled with drought and Colorado beetles, and in Connecticut, 85, the conditions of growth have been unfavorable. The New England and Middle States as a whole are below average, but all the other sections are full average.

or slightly above. The following notes from our statistical correspondence illustrate the local variations of condition:

MAINE.—*Piscataquis*: Decreased acreage. *Cumberland*: Promising.

NEW YORK.—*Albany*: Look well; but the beetles are here. *Westchester*: Many acres ruined by the beetle. *Dutchess*: Injured by the beetle. *Olsegow*: Overrun with beetles. *Genesee*: Diminished acreage, owing to low prices. *Saratoga*: Less acreage through fear of the beetle; the crop badly injured by it in some localities. *Columbia*: Being injured by the beetle to some extent. *Orange*: The prospect materially affected by the ravages of the beetle. *Suffolk*: The beetle ravaging the crop. *Yates*: Doing nicely, except where taken by the beetle. *Kings*: Much injured by the beetle. *Richland*: The beetle would destroy all if let alone.

NEW JERSEY.—*Gloucester*: Greatly injured by drought. *Sussex*: About half the acreage of last year; will be a good crop where the beetle has been fought with Paris green. *Warren*: Look well where the beetle has been kept off.

PENNSYLVANIA.—*Cameron*: Look well. *Clearfield*: Small acreage, but look well. *Indiana*: Excellent. *Bucks*: Acreage decreased 25 per cent. on account of the beetle, and that will shorten the crop planted. *Delaware*: Show well. *Union*: Promise of a good crop.

MARYLAND.—*Howard*: Small acreage on account of the beetle. *Chesterfield*: Early Rose very fine in size and quality. *Baltimore*: Indications of a fine crop.

VIRGINIA.—*Orange*: Early will be very short owing to drought. *Elizabeth City*: Early turn out better than last year, and command a better price.

NORTH CAROLINA.—*Hertford*: Excellent. *Caldwell*: Injured by excessive rains.

SOUTH CAROLINA.—*Colleton*: Never better.

GEORGIA.—*Hancock*: Very fine. *Haralson*: Two weeks late, but looking well. *Jefferson*: Unusually large and good crop. *McDuffie*: A dry May and wet June have been the life of the crop. *Walton*: Good.

FLORIDA.—*Jackson*: Short. *Gadsden*: The acreage was increased fully 300 per cent., but the condition is 25 per cent. below average.

ALABAMA.—*Lauderdale*: A good crop; all made.

MISSISSIPPI.—*Perry*: Better than last year 10 per cent.

TEXAS.—*Harrison*: Doubling our crop. *Upshur*: Better than last year. *Burleson*: Cut short by drought in April and May.

TENNESSEE.—*Gibson*: Come up badly; too much wet weather. *Loudon*: Extra fine. *Polk*: Excellent. *Greene*: Very promising.

WEST VIRGINIA.—*Grant*: The old black-striped potato-beetle has again appeared in large numbers. *Monroe*: Fine. *Wetzel*: Materially injured by dry weather.

KENTUCKY.—*Lewis*: Short, owing to dry weather.

OHIO.—*Adams*: Look well. *Portage*: Promise to be plenty as last year. *Washington*: A large crop planted; look well. *Defiance*: Damaged by excessive rains. *Lucas*: Bugs and weeds are thriving better than potatoes.

MICHIGAN.—*Ottawa*: Too much rain. *Muskegon*: Suffering on heavy lands from excessive rains.

INDIANA.—*Clarke*: Very good. *Madison*: Look well.

KANSAS.—*Lyon*: Rotting. *Montgomery*: Acreage, 338. *Reno*: Extra good.

NEBRASKA.—*Antelope*: Too dry. *Dodge*: Doing well.

OREGON.—*Clackamas*: Considerably injured by late rains, and very backward.

UTAH.—*Kane*: All early potatoes were cut down by the frost of May 17.

DAKOTA.—*Buffalo*: Suffering from drought and ravages of the beetle.

SWEET-POTATOES.

In nearly all the States reporting this crop the acreage has been increased, while in the others the decline has been but small. The largest increase, 14 per cent., is noted in Georgia and Kansas, and the greatest decline, 9 per cent., in Ohio. Pennsylvania has fallen off 1 per cent. and Indiana 2 per cent. All the other States show a decided increase, making a net increase on the whole of about 6 per cent. The condition of the crop is above average on the whole, but the range of variation is very narrow. The maximum, 109, is in Texas, and the minimum, 94, in Louisiana. The large-producing States are all full average, or a little above, while the deficiencies of the few low-average States are very small. The present indications point to a very fair crop in all States where this plant is grown.

VIRGINIA.—*Chesterfield*: Large acreage, planted in good time, and looking well. *Northampton*: Cannot expect more than 75 per cent. of a crop, owing to diseased plants and fleas.

NORTH CAROLINA.—*Wake*: Rather dry for setting the plants.

SOUTH CAROLINA.—*Clarendon*: Very promising. *Colleton*: Never better.

GEORGIA.—Very fine; acreage 200, and condition 150. *Henry*: More planted than last year by 25 per cent.; nearly all the freedmen have a patch. *Jefferson*: Unusually large and good crop. *McDuffie*: A dry May and wet June have been the life of the crop. *Walton*: Good.

FLORIDA.—*Jackson*: Will be deficient, owing to drought in May.

ALABAMA.—*Covington*: Unfavorable season for setting out the vines. *Crenshaw*: Fine. *Lauderdale*: Looking well. *Conecuh*: Increased acreage and more advanced than last year.

TEXAS.—*Waller*: Fine weather for the crop. *Austin*: Promise well. *Tarrant*: Never better. *Washington*: Quite promising.

TENNESSEE.—*Gibson*: Doing well; fine season for setting the plants.

KENTUCKY.—*Gallatin*: Remarkably fine.

MISSOURI.—Cut short by dry weather at the time of setting out the plants.

BEANS.

The acreage in beans is equal to or greater than that of last year in all sections, except the States north of the Ohio River, in which there is a reduction of 4 to 8 per cent., but the acreage in all the States is about equal to that of last year, the deficiency in the section last named being made up by an increase elsewhere. Our returns indicate about an average condition of the crop on the 1st of July.

SORGHUM.

No returns of acreage have been received from any Atlantic State north of Maryland. In the Southern States generally, there has been an increased planting over last year, but in the Northwest, a reduction in all the States except Indiana, which reports an acreage equal to last year's. In the South Atlantic and Gulf States the condition of the crop is about average on the whole, but in the Northwest a considerable depression is noted. No culture of sorghum is reported on the Pacific coast.

VIRGINIA.—*Madison*: Larger crop than ever before planted, and looking well.

SOUTH CAROLINA.—*Edgefield*: Little patches of sorghum in all directions.

GEORGIA.—*Upson*: Area increased 20 per cent. *Troup*: Acreage, 150. *Baldwin*: Acreage, 200, and condition 150. *Hancock*: Acreage, 130; condition, 120.

ALABAMA.—*Covington*: Acreage increased, but still small. *Crenshaw*: Acreage and condition each 150. *Conecuh*: Increased acreage and more advanced than last year.

MISSISSIPPI.—*Amite*: Diminished acreage, with increase of Louisiana cane. *Lauderdale*: Not as good as last year. The cultivation diminishing, and Louisiana cane increasing. *Coahoma*: Our first crop, and old sugar-raisers say it looks splendid.

TEXAS.—*Upshur*: Acreage increased 50 per cent., and condition 120. *Austin*: Fine. *Burleson*: Doing well.

ARKANSAS.—*Grant*: Coming into notice slowly.

UTAH.—*Weber*: Backward, but looking well.

SUGAR-CANE.

Seven States report a greater or less acreage in sugar-cane. Of these Georgia, Florida, Alabama, Mississippi, and Texas indicate an increase of 5 to 19 per cent. over the acreage of last year. South Carolina plants 15 per cent. less and Louisiana 2 per cent. less than last year. The decrease in Louisiana is more than sufficient to counterbalance the increase in all the other States. Texas and Georgia seem to be enlarging their cane-culture very considerably.

FLORIDA.—*Jackson*: Looks well; fully up to the season. *Gadsden*: Acreage increased 20 per cent., and the condition full average.

ALABAMA.—*Crenshaw*: Good. *Conecuh*: Increased acreage, and more advanced than last year.

MISSISSIPPI.—*Amite*: More extensively cultivated than ever before. *Lauderdale*: The cultivation increasing. *Pike*: More planted. *Perry*: Acreage increased 25 per cent., and the condition 10 per cent. better than last year.

TEXAS.—*Harrison*: Has been grown here successfully for a year or two, and we are doubling the crop. *Cherokee*: The mild winter started the cane, and at the planting-time many of the shoots were broken off. *Upshur*: Acreage increased 30 per cent. *Burleson*: Doing well.

COTTON.

Cotton, in the first week of July, is in a condition of healthy growth—less favorable than in July of last year—well cultivated and reasonably clear of grass. During the last half of June its growth was rapid, and blooms were freely reported in the more southern belt. No complaints of drought are received; rains have been frequent, and, in a large area, in excess of the requirements for the highest condition. In rainy districts the uplands and sandy lands give better promise at present than the bottoms. In South Carolina and in Florida storms were especially severe between June 11 and 18; in some localities, seven days of continuous rain.

In comparison with last year, North Carolina, Georgia, and Texas report higher condition; all the other States lower figures than in July of 1875. The general average of 1875 slightly exceeded 100; the present average of condition is 97.6; the unit of comparison being normal growth and unimpaired vitality.

In comparison with the report of June, the States that have made improvement are North Carolina, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, and Tennessee. Georgia has held the high condition of last month. South Carolina has declined from 98 to 90, in consequence of excessive moisture.

The figures for condition are as follows: North Carolina, 104; South Carolina, 90; Georgia, 103; Florida, 98; Alabama, 100; Mississippi, 94; Louisiana, 92; Texas, 99; Arkansas, 97; Tennessee, 103.

VIRGINIA.—*Dinwiddie*: The most favorable season for cotton for several years.

NORTH CAROLINA.—*Warren*: An excellent stand; generally clear of grass; backward, owing to cold nights. *Wayne*: Has been well cultivated and promises an unprecedented yield. *Cumberland*: Fully fifteen days behind. *Gaston*: Late and small, but clear of grass and healthy. *Wilson*: Healthy, free from grass, and in fine condition. *Duplin*: Better than ever known. *Pitt*: The weather in June very seasonable, and a large crop promised. *Wake*: Clean and in good condition, well advanced. *Nash*: On high and sandy lands, well advanced; on low and stiff lands, bad stand, small, and somewhat grassy. *Beaufort*: Has grown rapidly the last two weeks. *Hartford*: Early, and very promising. *Pasquotank*: Late seven to ten days, but looks well; favorable season for cultivating. *Caldwell*: Injured by excessive rains.

SOUTH CAROLINA.—*Beaufort*: Much injured by a prolonged rain-storm in June. *Clarendon*: Seven days of continuous rain proved very injurious; the leaves turned from green to red; but the past few days of warm, dry weather have given the plant a start. *Chester*: Six days of excessive rain, ending June 19, gave cotton on sandy lands the red rust, and many of the fields have become grassy, and are not yet cleaned. *Newberry*: Promises a good yield. *Georgetown*: A good stand was checked by drought in April and May; and owing to recent protracted rains, grass now has the ascendency. *Lexington*: Backward. *Marlborough*: Very good; clear of grass and healthy. *Richland*: Much injured and destroyed by a freshet. *Barnwell*: Injured 5 per cent. by steady rain, from the 11th to the 18th of June. *Fairfield*: A week of continuous heavy rains, ending in a disastrous freshet, has done the crop great injury. *Horry*: Acreage increased 25 per cent.; eight to ten days late, and damaged badly by heavy rains from June 10 to the 20th. *Spartanburgh*: Two weeks behind in size and fruitage. *Orangeburgh*: Very much injured by heavy rain-storms. *Edgefield*: Small, but good stands and vigorous plants. *Marion*: Bloomed about eight days later than last year. *Chesterville*: Too much rain for cotton. *Laurens*: Poor stands, and backward; much destroyed by devastating rains.

GEORGIA.—*Dooly*: Fine; just beginning to form. *Elbert*: Destroyed on the bottoms by a freshet in June. *Marion*: Backward, but good stands, well cultivated, and promising. *Fannin*: Not a very good stand; killed by the bud-worm. *Thomas*: Fine. *Troup*: Prospect very good. *Baldwin*: The acreage 85, and the condition 120. *Butts*: The stand and condition unusually good. *Columbia*: Looking well. *De Kalb*: Well worked, and fine promise. *Hall*: Not doing well; too much rain. *Hancock*: Very grassy, owing to too much rain, and not fruiting well. *Laurens*: Never better, and in good tilth. *Madison*: Bad stand, and two weeks late. *Mitchell*: Most promising crop since 1865. *Dodge*: Best prospect in four years. *Haralson*: Two weeks late, but looking well. *Jefferson*: Much above average. *McDuffle*: A wet June has injured the crop to a large extent on all low lands; it is in the grass on many farms. *Walton*: Very promising. *Hart*: Late two weeks. *Lincoln*: The profusion of rain June 11-13, overflowing the bottoms, totally destroyed 5 per cent. of the crop. *Terrell*: Prospect improved very much in June. *Fulton*: Well worked, and looks well; blooms on the 24th of June. *Carroll*: Promises a good yield.

FLORIDA.—*Jefferson*: Greatly damaged by the most destructive rain-storm ever known. *Madison*: Fine. *Jackson*: Prospect good. *Taylor*: Much damaged in the lower part of the county by excessive rains.

ALABAMA.—*Clarke*: Quite small; much later than last year. *Greene*: Late twenty to twenty-five days, but in good growing condition. *Crenshaw*: Very fine, though the acreage is decreased 25 per cent. *Monroe*: Small, but looks well. *Lauderdale*: More backward, and smaller than last year. *Blount*: Very backward. *Conecuh*: The plant small, but free from grass and weeds, and well fruited. *Perry*: Late ten days, but very promising. *Colbert*: Growing finely. *Cherokee*: Has a fine growth, but has suffered from excessive rains and want of clean cultivation.

MISSISSIPPI.—*Grenada*: Has come out wonderfully during June. *Amite*: Reduced acreage, but better cultivation. *Pike*: Promising. *Perry*: Young, but looks well. *Monroe*: The plant healthy and in good condition. *Yazoo*: Backward two weeks. *Lowndes*: The prospect not so good as last year. *Newton*: Far behind last season in size and stands. *Chickasaw*: Stands not good in places, and ten days late, but healthy. *Clarke*: Late two weeks. *De Soto*: Late, but healthy. *Franklin*: Two weeks late; small; free from grass and weeds; too dry. *Lincoln*: The plant small, but looks well.

ARKANSAS.—*Saint Francis*: Two weeks late, but looking well. *Yell*: Fine. *Monroe*: Coming forward rapidly. *Bradley*: A part rather late; chopped out, and looking healthy and thrifty. *Izard*: Well cultivated, and promises a full average. *Marion*: Injured by cold nights and storms of rain. *Ouachita*: Very poor prospect.

TENNESSEE.—*Gibson*: Late, but looks well. *Giles*: Small and backward, but improving.

MISSOURI.—*Dunklin*: Favorable; branched lower on the stock, and the leaves larger than for years; squares well formed. *Mississippi*: Not well cultivated, owing to the rains.

LOUISIANA.—*Concordia*: The water is so slow and subsiding from overflowed lands, that there will be a large decrease in acreage. *East Baton Rouge*: In splendid condition in all the localities where the labor has not been interfered with. *Lafayette*: Slightly improved by the favorable weather. *Madison*: Twenty per cent. lost by overflow; the remainder growing finely. *Carroll*: Healthy and fine, but in the grass in some localities. *Jackson*: Backward, but doing well.

TEXAS.—*Bexar*: Late three weeks, but growing rapidly. *Burnet*: Backward. *Fannin*: The most favorable seen here for years. *Bastrop*: Flattering prospects. *Upshur*: Later than last year. *Colorado*: A little late, but one of the most promising crops for years. *Laredo*: Later than last year, but the condition splendid, though suffering from drought in localities. *Williamson*: Very promising. *Red River*: Growing very fast. *Matagorda*: Early crops very fine, but the greater part very late and small. *Walker*: Damaged by rains. *Austin*: Early-planted on sandy uplands very promising; on black uplands and bottoms very backward. *Collin*: Doing well. *Dallas*: Never better. *Gillespie*: Acreage increased 400 per cent., and in good condition. *Smith*: Late two weeks, but very healthy and promising. *Titus*: Doing finely. *Washington*: Late three or four weeks, but looks first rate. *Travis*: Growing finely.

TOBACCO.

The acreage in tobacco in 1876 appears to be less than in 1875. Our reports exhibit some very remarkable variations in the areas planted in the different States. Nearly all the great tobacco regions have planted a smaller breadth than last year. Massachusetts has fallen off 20 per cent., Connecticut 5 per cent., New York 3 per cent., Maryland 6 per cent., Virginia 39 per cent., North Carolina 58 per cent., Tennessee 33 per

cent., Kentucky 16 per cent., Ohio 3 per cent., Indiana 5 per cent., and Illinois 9 per cent. On the other hand Pennsylvania has increased her acreage 22 per cent., Texas and Arkansas each 32 per cent., Missouri 17 per cent., and Kansas 15 per cent.

The condition of the crop in all the States reporting is about 3 per cent. below average. The highest condition, 105, is found in Connecticut and Texas; and the lowest, 81, in North Carolina and Wisconsin. The New England and Middle States are full average or above. Virginia accounts for her diminished area and low condition, 82, by the scarcity of plants, which were, in numerous localities, destroyed by drought, frost, flies, and grasshoppers. The same difficulty embarrassed the planting in North Carolina, Tennessee, and Kentucky; though in some counties of the last named excessive rain was as injurious as the drought. North of the Ohio River heavy rains injured lowland crops. Missouri and Kansas succeed in getting in large crops, which are in fine condition. A more extended inquiry will be instituted hereafter, and the results will be given more in detail.

MARYLAND.—*Howard*: Good planting-season and the plants, just set out, looking well.

VIRGINIA.—*Caroline*: The crop will be later than usual, owing to a scarcity of early plants. *Pittsylvania*: Early plants killed by frost, and late by the tobacco-fly. *Chesterfield*: Less planted than last year. Looking well. *Powhatan*: Plants nearly all destroyed by fly. A third of the usual crop may be planted, but that late. *Fluvanna*: Very short and late. *Lunenburg*: Acreage less than last year, owing to a scarcity of plants, caused by the fly. *Orange*: Has suffered from drought. *Amelia*: The small acreage of tobacco owing to dry weather and scarcity of plants, they having been destroyed by the fly worse than ever before. At present not one-seventh of a crop stands on the land intended for tobacco. *Campbell*: Poor prospect. *Dinwiddie*: Diminished acreage, owing to scarcity of plants, caused by dry weather; that planted growing well. *Franklin*: The grasshoppers are injuring the tobacco more than ever known. They and the dry weather for the last twenty days have greatly blasted the prospect. *Prince Edward*: Planting reduced by scarcity of plants and dry weather. *Halifax*: The scarcity of plants, owing to frost, insect injuries, and unpropitious seasons for planting, make the prospect the gloomiest ever known. *Mecklenburgh*: Doing badly, owing to the long-continued drought.

NORTH CAROLINA.—*Warren*: The first crop of plants killed by cold and the black fly, the second crop being small and tender; may die after being set out at this late season. *Alamance*: Scarcity of plants; some without any; not over 60 percent planted; poor prospect. *Davidson*: Growing. *Rockingham*: Acreage and condition worse than was ever known. *Yadkin*: Very little over half a crop planted. The plants were killed by cold in March. *Caswell*: Shorter crop than for thirty years. *Person*: Failure of plants. Not more than 10 per cent. of a crop planted, and that has been nearly eaten up by the fly and grasshopper. *Orange*: The plants destroyed to such extent that only about 33 per cent. could be set out. *Davie*: Plants destroyed in the beds by bugs; not more than half a crop planted, and much of that very late.

SOUTH CAROLINA.—*Edgefield*: Tobacco patches dot almost every plantation.

FLORIDA.—*Gadsden*: Stands somewhat defective, but well cultivated and free from grass.

ALABAMA.—*Crenshaw*: The best we ever had.

TEXAS.—*Austin*: Fine.

ARKANSAS.—*Boone*: Early plants killed by frost; crop consequently late, and now suffering from lack of cultivation, owing to excessive rain.

TENNESSEE.—*Trousdale*: Short crop for the want of plants. The early plants were devoured by insects. *Gibson*: Decreased acreage, owing to scarcity of plants; fine season for setting out the plants. *Smith*: The plants have failed, so that no one estimates the crop above 75. *Giles*: Acreage reduced by a failure of plants. *Robertson*: Plants were very scarce, and the grasshoppers have been very destructive to them. *Dickson*: Bugs destroyed most of the plants in early spring. *Macon*: The crop 33 per cent. shorter than anticipated three weeks ago; the plants have not grown well. *Montgomery*: Being seriously injured by grasshoppers.

WEST VIRGINIA.—*Doddridge*: Not more than half a crop.

KENTUCKY.—*Daviess*: Badly damaged by excessive rains. *Logan*: Not more than 33 per cent. of last year's acreage for want of plants. *Ohio*: Drowned out in a portion of the county. *Gallatin*: Very late and small. *Mason*: All set and growing. *Warren*: Acreage short, owing to a failure of plants. *Hardin*: Looks well. *Calloway*: Damaged by heavy rains, causing the stock to rot off; grasshoppers and bugs very destructive to

the crop. *Monroe*: Only half a crop, set out late, and the grasshoppers have destroyed at least one-sixth of that. *Todd*: About 75 per cent. of a crop planted, but not growing.

INDIANA.—*Spencer*: June very wet, and the crop a failure on low land.

MISSOURI.—*Chariton*: Grows finely. *Stone*: Late, but looks well. *Vernon*: Only a small per cent. planted, owing to a very wet spring.

KANSAS.—*Linn*: A large crop in place of none last year, owing to the grasshoppers.

FRUIT.

The condition of the fruit crop was less favorable on the 1st of July than on the 1st of June. Most of the States report lower condition of the apple and peach crops, as a whole, though in different parts of the country localities boast of an unusual supply, and a good prospect of fruits not yet ripened. The following notes from our correspondence illustrate the local aspects of the fruit-supply for the coming year:

VERMONT.—*Grand Isle*: Light, owing to ravages of forest-worm in 1875. *Essex*: Very little of any kind, owing to the hard winter.

PENNSYLVANIA.—*Bedford*: All kinds will be plenty. *York*: Promise of an abundant crop.

VIRGINIA.—No fruit except apples and wild berries, of which the crop is larger than usual. *Campbell*: Scarce, except in a few localities.

NORTH CAROLINA.—*Alamance*: Light crop. *Perquimans*: Except peaches, an abundant crop.

MISSISSIPPI.—*Lowndes*: A good crop of grapes and figs, which rarely fail; and small fruits are abundant.

TEXAS.—*Panola*: The pear trees are nearly all dead from blight.

TENNESSEE.—*Sullivan*: A light crop, but doing well. *Bedford*: Small fruits very good. *Bradley*: Pears and plums plenty.

OHIO.—*Ashtrabula*: Cherries and strawberries better than usual. *Clermont*: Strawberries, raspberries, and other small fruits have done well. *Geauga*: All small fruits prosperous. *Hardin*: Raspberries and blackberries promise well.

MICHIGAN.—*Wayne*: All kinds never better. *Lenawee*: Cherries seem to be blasted, dropping off all the time. *Allegan*: All small fruits never better. *Mason*: Never a better prospect. *Newaygo*: Fruit-trees of all kinds blossomed unusually full, but the fruit falling off to such an extent as to indicate a very short crop.

INDIANA.—*Decatur*: Promise of the largest crop ever grown. *Hamilton*: A fine crop of all kinds, including berries.

WISCONSIN.—*Green Lake*: All kinds doing well.

IOWA.—*Tama*: Never better.

MISSOURI.—*Cass*: The different fruits have been reduced one-half by four or five hailstorms. *Ralls*: All kinds good. *Grundy*: Has done well generally, and cherries a perfect success. *Buchanan*: But half a crop. *Harrison*: Fruit-trees were very full of bloom, but the fruit has fallen off badly.

KANSAS.—*Douglas*: Light, except a fair crop of grapes and cherries.

OREGON.—*Multnomah*: The fruit-crop bids fair to be bountiful. *Linn*: All kinds nearly a failure. *Clackamas*: After a long season of cool, cloudy, and rainy weather, about the 11th of June the sun shone out with scorching heat, and for eight days the thermometer, in the shade, ranged from 90° to 106°; grape and blackberry leaves were scorched to a crisp, and gooseberries and currants were cooked on the bushes.

UTAH.—*Iron*: All killed by late frosts, except about 25 per cent. of a crop of berries. *Kane*: Fruit promises extra well, what is left.

APPLES.—Vermont and Connecticut report an improvement upon their high June averages, but the other States of New England have declined. The general condition is still above average. Franklin, Maine, complains of caterpillars, but the ravages of fruit-insects seem to be comparatively trifling this year. The Middle States are all above average, though all have declined from the high condition reported for June. Erie, New York, reports the deadening of the ends of small limbs to the length of six to twelve inches through some agency not stated. Of the South Atlantic States, Maryland has fallen to an average; but all the other States of this section, though still below average, have partially recovered from the low condition reported in June. The Gulf States, except Texas, have still further declined, Louisiana and Mississippi expecting but little over half a crop. Of the inland southern States, Tennessee and Kentucky have improved, the latter ris-

ing above average, but Arkansas and West Virginia have fallen off, and are 20 and 30 per cent. below average. North of the Ohio River, all except Indiana have declined, the northern localities being still above average. Prices in some localities are very low. Blight or insects are injuring the trees in a few counties. Except Nebraska, all the States west of the Mississippi have declined from their high June condition, but the general prospect is still for a crop above average. The Pacific States have declined, and are from 7 to 10 per cent. below average.

MAINE.—*Franklin*: Caterpillars destroyed the crop.

NEW HAMPSHIRE.—*Hillsborough*: A fair crop.

VERMONT.—Small quantity; above average in condition.

CONNECTICUT.—*New London*: Prospect of a large crop.

NEW YORK.—*Genesee*: Promise abundantly. *Saratoga*: Doing well; no worms troubling the trees. *Washington*: Promise abundantly. *Erie*: Light crop. *Allegany*: On the trees the ends of small limbs die, 6 to 12 inches in length, leaves, fruit, and wood.

PENNSYLVANIA.—*Indiana*: Will make a large crop. *Elk*: Never before so fine a promise.

MARYLAND.—*Caroline*: Falling off. *Worcester*: Very many dropped off.

VIRGINIA.—*Richmond*: A larger crop than usual. *Elizabeth City*: Plenty, and good.

NORTH CAROLINA.—*Gaston*: Making a better show than was expected. *Wilson*: Fine; best crop since 1872. *Davie*: Not more than half a crop. *Hertford*: A very large crop on the trees.

SOUTH CAROLINA.—*Clarendon*: A good crop, but very small. *Chesterfield*: A disease is killing many apple-trees, particularly young trees; similar to the pear-blight.

GEORGIA.—*De Kalb*: Not so badly damaged by the blight as was thought a month ago. *Walton*: The trees were full, but the fruit is falling badly. *Carroll*: A disease similar to rust in wheat is killing the apple-trees.

FLORIDA.—*Jackson*: Partial failure.

ALABAMA.—*Greene*: Trees dying from blight; those that have escaped are bearing a fair crop of good fruit.

TEXAS.—*Panola*: Have dropped off badly since the June report. The ends of small twigs have died. *Titus*: Some disease, blight, or insect, has badly injured our orchards; the fruit drops, and twigs and limbs are dying.

ARKANSAS.—*Cross*: Light crop. *Sharp*: Falling off. *Fulton*: Fair crop.

TENNESSEE.—*Monroe*: Compare favorably with last year. *Sherman*: Abundant. *Bedford*: Exceedingly abundant. *Bradley*: Plenty. *Greene*: Set well, but dropped off badly.

WEST VIRGINIA.—*Pocahontas*: Few. *Braxton*: Small crop in good condition.

KENTUCKY.—*Shelby*: Half a crop in place of none last year. *Callaway*: Small crop doing well.

OHIO.—*Columbiana*: Not more than half a crop. *Geauga*: Many have fallen off, but promise above average. *Lorain*: Falling off badly. *Wood*: Dropping off badly, but a fair crop will be left. *Hancock*: Plenty, but falling off rapidly.

MICHIGAN.—*Wayne*: Never more promising. *Mason*: Prospect never better.

INDIANA.—*Decatur*: Promised well, but have fallen off badly. *Howard*: Reduced 30 per cent. since June 1, by falling off. *Cass*: A blight has appeared in the apple-trees, which is doing great damage. It seldom goes below the present year's growth, and it attacks some varieties more than others. *Floyd*: The crop will be immense; now worth only \$1.50 per barrel. *Hamilton*: A fine crop. *Kosciusko*: A light but fine crop. *Washington*: Falling off very much. *Whitley*: The trees suffering from some kind of a twig-blight. The young twigs die when ten inches long or less.

ILLINOIS.—*Hardin*: Most orchards are full and of fine quality. *Mercer*: A good crop. *Mason*: Doing well. *Madison*: Less fruit than was expected from the bloom. *Pulaski*: The pear and apple blight is making sad havoc with the trees.

WISCONSIN.—*Walworth*: Medium.

IOWA.—*Humboldt*: Fine. *Jackson*: Best prospect for many years. *Audubon*: Injured by drought. *Jefferson*: Promising.

MISSOURI.—*Cass*: A great many have dropped off. *Butler*: Half a crop. *Caldwell*: Have dropped off till scarcely any are left. *Platte*: Not more than one-eighth of a crop, but very good. *Vernon*: Failed all through June through some unknown cause; reduced 50 per cent. *Perry*: Falling off.

KANSAS.—*Franklin*: The wine-sap is almost the only variety which bears a full crop. *Jackson*: Dropped off badly while small. *Wabaunsee*: Large crop in the western part, where alone they are cultivated to any extent.

CALIFORNIA.—*Yuba*: Short crop. *Sonoma*: The crop seriously injured by excessive heat in June.

PEACHES.—Only three States, Massachusetts, Iowa, and California, will have average crops of peaches. Connecticut, Delaware, Maryland, Virginia, North Carolina, Georgia, Texas, Kentucky, Illinois, and Missouri find their condition somewhat improved during June, but in the other States there has been a decline in some cases to figures indicating a total failure of the crop. The great peach regions of the Middle States show a very serious decline, Delaware promising not much over a fourth of a crop. In the South Atlantic and Gulf States the promise is from a fourth to a half a crop, and in the inland Southern States still less; Arkansas will probably realize less than 10 per cent. of an average. North of the Ohio River the small crop of Michigan is nearly average, but the great crops of Ohio, Indiana, and Illinois are at least 40 per cent. below average on the whole. West of the Mississippi the facts are about the same; the northern counties of Iowa and Nebraska are average or above, but Missouri and Kansas are but little over half an average. On the Pacific coast California reports a condition improved during June and above average; Oregon 10 per cent. below average and considerably below the June report.

PENNSYLVANIA.—Light crop.

MARYLAND.—*Caroline*: Entire failure. *Worcester*: Utter failure.

VIRGINIA.—Few, except old seedlings. *Prince William*: Trees of the natural fruit quite full.

NORTH CAROLINA.—*Wilson*: Fine; Hales' Early doing very well; not rotting on the trees as heretofore. *Hertford*: Not entirely killed by the late frost.

SOUTH CAROLINA.—*Clarendon*: Poor crop.

GEORGIA.—*Carroll*: The crop much better than expected.

FLORIDA.—*Jackson*: Partial failure.

TEXAS.—*Dallas*: Light crop.

TENNESSEE.—*Greene*: Quite scattering.

KENTUCKY.—*Shelby*: Half a crop in place of none last year.

MICHIGAN.—*Wayne*: Never more promising. *Mason*: Prospect never better.

INDIANA.—*Decatur*: Promised well, but have fallen off badly. *Floyd*: Thin on the trees and badly rotting. *Hamilton*: A fine crop. *Kosciusko*: Less than half a crop, but look well. *Madison*: Seedlings only show fruit.

IOWA.—*Jefferson*: Promising.

MISSOURI.—*Phelps*: A great many have dropped off. *Caldwell*: Have nearly all dropped off. *Saint Clair*: Some orchards full while others have none; quality good. *Harrison*: Fine crop.

CALIFORNIA.—*Sonoma*: Promise of an exceedingly large crop.

GRAPES.—The grape-crop of New England would indicate very nearly an average condition but for winter-killing in some of the northern portions. The Middle and South Atlantic States promise nearly an average yield. Some local complaints of caterpillars come up from Virginia, but generally injuries of this kind are conspicuous by their absence. The condition of the crop in the Gulf States is from 20 to 25 per cent. below average, but in the inland Southern States, excepting Arkansas, it is above average. North of the Ohio the condition would be nearly average but for the tendency to rot and mildew, resulting from recent heavy rains. Between the Mississippi and Missouri Rivers the condition on the whole is about 10 per cent. below average; west of the last-named river, nearly 10 per cent. above. The Pacific coast is about average.

MAINE.—*York*: The vines badly winter-killed; the roots sprouting again.

PENNSYLVANIA.—*Indiana*: Will be an extensive crop.

MARYLAND.—*Caroline*: Good. *Worcester*: Promise of full crop.

VIRGINIA.—*King George*: Promise abundant. *Elizabeth City*: The vines infested with caterpillars, and the fruit dropping off.

NORTH CAROLINA.—*Gaston*: Above the usual full bearing. *Hertford*: In abundance.

SOUTH CAROLINA.—*Clarendon*: Abundant. *Newberry*: Were unusually promising, but the continuous rain has caused them to rot badly. *Lexington*: On sandy soil and low land have rotted some from the wet weather, but on clay soil are sound, and prom-

ise an abundant yield. *Richland*: Most of the bloom destroyed in April by a frost, but vines bloomed again, and will make 67 per cent. of a crop.

GEORGIA.—*Lumpkin*: A good crop of wild grapes. *Troup*: Fine.

FLORIDA.—*Santa Rosa*: In some localities the Scuppernong have done worse than ever before, in others they are very fine. All other grapes are very fine. *Jackson*: Good yield expected.

ALABAMA.—*Baldwin*: Not injured; Scuppernongs the standard. *Greene*: Fully up to average in quantity and quality.

MISSISSIPPI.—*Lowndes*: A good crop.

TEXAS.—*Bowie*: Thousands of bushels of wild grapes of different varieties, some of them very large and rich in flavor, could be gathered in the county. *Coryell*: Very fine. *Nueces*: The grape interest is growing in importance. Several vineyards recently started with 1,000 to 3,000 vines, and some of them now bearing very fine fruit. *Dallas*: Rotting.

ARKANSAS.—*Cross*: Light crop. *Fulton*: Rotting.

TENNESSEE.—*Greene*: Promise well.

WEST VIRGINIA.—*Monroe*: Abundant crop.

OHIO.—*Vinton*: Best prospect ever known. *Wood*: Very fine. *Hancock*: All right. *Mercer*: Never better.

MICHIGAN.—*Wayne*: Never more promising.

INDIANA.—*Kosciusko*: Mildewing badly, owing to incessant rains.

ILLINOIS.—*Madison*: Beginning to rot.

WISCONSIN.—*Walworth*: Better than last year.

MISSOURI.—*Phelps*: Quite promising, but some are rotting. *Barton*: Total failure of all fruits except grapes. *Ripley*: Rotting considerably. *Vernon*: Abundant and fine. *Montgomery*: Rotting badly. *Perry*: Nearly all rotting.

KANSAS.—*Franklin*: The rot is threatening fearful destruction. *Montgomery*: Badly damaged by rose-bugs.

CALIFORNIA.—*Yuba*: Large yield. *Sonoma*: Promise of an exceedingly large crop.

FLAX.

NORTH CAROLINA.—*Camden*: A good crop housed.

WISCONSIN.—*Stearns*: This crop laid aside; the mustard-seed sown with it is overwhelming the land.

MISSOURI.—*Henry*: The acreage of corn reduced by the very large acreage of flax sown for the seed. *Bates*: The area increased 20 per cent. and is looking splendid, promising 14 to 18 bushels of seed per acre. *Lawrence*: Considerable flax is being raised this year, and it grows very fine. *Vernon*: Late, but a good prospect for 8,000 bushels of seed.

KANSAS.—*Johnson*: Splendid. *Franklin*: About average.

Table showing the condition of the crops, &c., on the 1st day of July, 1876.

States.		CORN.		WHEAT.		RYE.		OATS.		BARLEY.		PASTURE.		CLOVER.		TIMOTHY.		ROTAVATORS, (Solanum tuberosum.)	
		Average condit. from July 1.																	
Maine	104	102	102	102	102	103	101	101	103	100	105	102	103	103	94	94	97	97	
New Hampshire	97	100	95	103	101	101	100	100	101	100	108	91	91	97	97	97	102	102	
Vermont	100	98	84	101	101	102	100	100	101	104	100	99	100	99	98	98	97	97	
Massachusetts	120	108	100	100	100	102	100	100	100	100	100	90	95	105	105	100	92	92	
Rhode Island	107	107	102	102	98	96	98	100	100	103	100	102	100	101	99	92	85	94	
Connecticut	107	102	98	100	97	100	94	99	99	102	96	101	105	105	104	104	85	85	
New York	99	101	97	100	90	85	98	101	101	101	101	98	100	105	94	95	69	87	
New Jersey	103	100	85	105	99	95	100	100	100	103	100	99	100	103	98	93	98	98	
Pennsylvania	101	100	95	105	105	105	102	102	102	103	107	107	103	105	102	100	100	100	
Delaware	100	100	101	108	102	102	102	102	102	103	101	101	100	100	104	101	98	98	
Maryland	103	98	91	101	101	97	103	97	103	92	101	101	103	103	104	92	97	97	
Virginia	103	98	95	90	85	103	103	103	103	100	100	100	100	100	102	101	106	106	
North Carolina	104	103	95	90	85	103	103	103	103	103	104	104	104	104	111	101	104	104	
South Carolina	105	103	65	80	89	101	95	98	115	104	104	104	104	104	106	104	107	107	
Arkansas	109	109	98	108	82	82	83	83	105	105	102	102	102	102	102	129	89	89	
Tennessee	104	104	88	76	76	82	83	83	82	82	87	87	87	87	87	100	101	102	
West Virginia	102	102	95	76	76	82	83	83	83	89	100	100	100	100	106	101	101	101	
Kentucky	106	102	86	96	96	95	95	95	100	94	91	91	91	91	91	92	92	92	
Ohio	96	93	98	102	102	101	102	102	102	103	105	99	101	101	108	108	106	106	
Michigan	107	100	79	102	92	92	92	92	92	97	83	84	84	84	106	101	101	100	
Indiana	104	89	97	77	97	97	97	97	97	96	95	83	83	83	110	104	105	105	
Illinois	105	102	65	83	83	83	83	83	83	76	88	82	82	82	114	111	104	104	
Wisconsin	110	91	79	95	95	95	95	95	104	101	102	102	102	102	106	105	99	100	
Minnesota	97	90	92	77	77	96	91	95	95	95	95	95	95	95	95	105	108	102	
Iowa	104	88	94	70	70	95	88	96	96	96	99	92	92	92	92	99	97	98	
Missouri	104	97	103	97	97	101	102	94	94	98	98	99	99	99	106	103	104	104	
Kansas	104	96	111	101	101	103	105	105	108	100	95	95	95	95	100	101	112	102	
Nebraska	120	99	110	90	101	95	95	95	100	100	100	99	100	100	106	86	95	96	
California	134	105	96	105	105	105	105	105	105	103	103	103	103	103	103	103	110	101	
Oregon	104	101	92	92	92	92	92	92	92	92	102	96	96	96	96	103	108	97	97

Table showing the condition of the crops, &c., on the 1st day of July, 1876—Continued.

States.	POTATOES, Batatas edulis.) SWEET.	BEANS.	SORGHUM.	SUGAR-CANE, (not Sorghum.)	TOBACCO.	COTTON.	WOOL.	APPLES.	PEACHES.	GRAPES.	Average condit. ion July 1.
											Average condit. last year.
Maine.....	90	101	.....	.....	73	102	.....	104	91	77	77
New Hampshire.....	100	103	.....	.....	80	102	.....	89	113	92	100
Vermont.....	90	96	.....	.....	93	94	.....	97	87	100	101
Massachusetts.....	108	100	.....	.....	122	101	.....	101	123	87	102
Rhode Island.....	100	102	.....	.....	105	105	.....	98	101	80	95
Connecticut.....	101	102	.....	.....	95	105	.....	102	100	82	100
New York.....	96	101	.....	.....	105	101	.....	95	107	82	100
New Jersey.....	98	101	.....	.....	101	101	.....	95	107	91	101
Pennsylvania.....	93	100	.....	.....	105	101	.....	100	105	97	100
Delaware.....	100	100	.....	.....	108	105	.....	100	105	96	101
Maryland.....	101	100	99	97	100	96	96	96	101	100	98
Virginia.....	99	99	104	101	100	96	96	96	101	102	98
North Carolina.....	102	101	101	99	97	96	96	96	101	102	98
South Carolina.....	106	104	122	106	110	96	85	112	42	87	50
Georgia.....	114	106	102	101	113	102	113	104	100	105	89
Florida.....	102	100	110	116	105	101	105	101	100	72	90
Alabama.....	103	105	96	97	100	99	108	105	98	100	92
Mississippi.....	101	99	98	92	95	95	118	102	93	100	103
Louisiana.....	101	94	101	101	100	96	98	96	91	107	63
Texas.....	111	109	112	103	103	106	119	103	105	99	100
Arkansas.....	106	103	105	104	102	98	100	102	104	97	94
Tennessee.....	108	101	109	102	97	98	97	98	88	103	102
West Virginia.....	100	100	100	102	93	97	95	95	100	103	80
Kentucky.....	102	99	100	100	100	100	100	100	94	107	100
Oklahoma.....	91	96	95	97	95	98	98	97	99	95	94
Michigan.....	100	100	95	97	83	81	100	100	100	102	101
Indiana.....	98	99	96	98	98	96	96	96	95	88	98
Illinois.....	101	102	92	94	94	90	90	91	93	70	74
Arkansas.....	94	96	78	78	78	72	72	74	80	122	26
Wisconsin.....	101	96	92	92	92	92	92	92	100	103	100
Minnesota.....	102	100	103	94	80	97	97	97	104	110	103
Iowa.....	105	99	101	97	91	91	92	92	101	100	127
Kansas.....	114	102	102	95	91	96	96	96	115	137	101
Nebraska.....	119	96	100	89	89	93	93	93	75	50	95
California.....	112	103	101	92	92	90	90	90	100	110	107

INSECT INJURIES.

The record of insect injuries is less formidable than in former years at this stage of the growing season. If the remaining part of the summer and fall should receive the same immunity, this source of annoyance and loss will be of small account in the production of 1876.

Colorado beetles, (Doryphora decem-lineata.)—This pest is diffused in small proportion over the Eastern and Western States. New Hampshire reports it in large numbers in Cheshire and Rockingham, but not so numerous in Hillsborough and Sullivan. They are in nearly all localities of Rutland, Vermont, and have just appeared in Addison. In Hampden, Massachusetts, they are numerous and voracious, and have put in an appearance in Berkshire and Plymouth. They have just hatched in Washington, Rhode Island. Windham, Connecticut, reports their arrival, while Hartford has been successfully fighting them with Paris green. Their presence is more generally acknowledged in New York; being noted in Columbia, Orange, Albany, Westchester, Delaware, Dutchess, Ontario, Otsego, Saratoga, Warren, Suffolk, Yates, Erie, and Kings. In several counties they are more destructive than in former years. In Sussex, Warren, and Richland, New Jersey, they are numerous, but have been successfully resisted by farmers. They are also destructive in many counties of Pennsylvania; being reported in Wyoming, Indiana, Armstrong, Beaver, Butler, Lehigh, Bucks, Delaware, Union, and Luzerne; in some localities they are more numerous than in any former year. Baltimore and Cecil, Maryland, are troubled with them, but constantly apply the Paris green. In New Kent, Virginia, they greatly damaged early potatoes, and are spreading over the whole county. They are also exceedingly troublesome in Russell, King George, and Prince William. They appeared early in Pocahontas, Grant, and Mouroe, West Virginia, but rapidly disappeared. Ohio reports them in one county, (Perry,) but less numerous than in any year since their first appearance. Michigan reports them in Lenawee as "thicker than ever," and as less troublesome in Livingston, Delta, and Ioseo. They were plenty in Steuben, Indiana; but in Clark they were not very destructive. They are quite numerous in Lake and Ogle, Illinois, but not very formidable in Richland, Wisconsin, Grant, Minnesota, Dodge, Nebraska, and Buffalo, Dakota. In the last-named county their ravages increase as the drought becomes more severe. In Grant, West Virginia, it is noted that as the beetle disappears, the old-fashioned potato-bug (*Epicauta vittata*) re-appears.

Hessian fly, (Cecidomyia destructor.)—This insect damages small grain in Snyder, Perry, Lehigh, and Lancaster, Pennsylvania; in Loudoun, Madison, Russell, Clarke, Prince William, and Northampton, Virginia; in Gordon, Butts, Clayton, Cobb, and Carroll, Georgia; in Coryell and Collin, Texas; in Boone, Arkansas; in Grand Traverse and Ionia, Michigan; in Waseca, Watonwau, and Hancock, Minnesota; in Jackson, Mitchell, Tama, and Clay, Iowa; in Phelps, Missouri, and in Cherokee and Neosho, Kansas. In some cases the damage was serious.

Weevil or midge, (Diplosis [Cecidomyia] tritici.)—This insect is noted in Ionia, Michigan, and in Howard, De Kalb, Hamilton, Wabash, and Wells, Indiana.

Chinch, (Micropus [Rhynparochromus] leucopterus.)—These insects are troublesome this year only in a few counties of the Northwest, being more or less destructive in Ogle and Winnebago, Illinois; in Grant,

Walworth, Washington, and Green, Wisconsin; in Jackson, Johnson, and Marion, Iowa; in Atchison, Missouri; and in Lincoln, Kansas.

Grasshoppers.—Different species of this pest are noted in different parts of the country, but their destructive sphere is yet quite circumscribed. The *Caloptenus femur-rubrum* is noted in Sullivan, New Hampshire; in Franklin, Virginia, it was very destructive on tobacco, as also in Person, North Carolina; in Cherokee, Alabama; in Robertson and Montgomery, Tennessee. The *C. spretus* is reported in Lyons, Redwood, and Watonwan, Minnesota; in Richland, Dakota, and in Jefferson, Montana. In Taos and San Miguel, New Mexico, a grasshopper which cannot be designated by the imperfect description given greatly injured the crops. It is known by the local name, "Little giant."

Miscellaneous.—In Franklin, Maine, fruit-caterpillars (*Oligocampa*) have destroyed many apples. The canker-worm, (*Anisopteryx vernata*) is less numerous in Plymouth, Massachusetts, than in former years. An insect, supposed to be the boll-worm, (*Heliothis armigera*), injured both cotton and corn in Fannin, Rabun, and Union, Georgia; in Blount, Sequatchie, and Van Buren, Tennessee. Jackson, Florida, is the only county, so far, that reports the cotton-caterpillar, (*Anomis [Aletia] xylinæ*). A species of the grub-worm (*Lachnostenra* sp.) is reported in Lycoming, Pennsylvania, and in Armstrong, (?) Tennessee. Joint-worms (*Isosoma [Eurytoma] hordei*) injured wheat in Cabell, West Virginia. Cut-worms (*Agrotis* sp.) destroyed lowland corn in Lauderdale, Alabama, and the crop generally in Stanton, Nebraska. Wire-worms (*Elater* sp.) injured corn in some localities of Kentucky. The currant-worm (*Nematus ventricosus*) is reported in Plymouth, Massachusetts, and Lenawee, Michigan. In Fannin, Georgia, late wheat was infested with lice, (*Aphis* sp.). Insects undesignated injured corn in New London, Connecticut; Saratoga, New York; Delaware, Pennsylvania, and Cherokee, North Carolina. In Saline, Kansas, a "green worm" damaged wheat while heading in June. In Chase, Kansas, an undesignated insect attacked winter-wheat.

EXTRACTS FROM CORRESPONDENCE.

DISEASES AMONG FARM-ANIMALS.—*North Carolina, Perquimans:* Hogs are dying of cholera.

Tennessee, Henry: The hogs and chickens have the cholera, so called.

Monroe: Hogs are scarce, and dying of cholera to an alarming extent.

Missouri, Harrison: Some have lost from 5 to 10 per cent. of their hogs from a disease called cholera.

HEAVY RAIN-FALL.—*South Carolina, Beaufort:* A rain storm in which 15 inches of water fell did great injury to the rice crop; many plantations on the Savannah were submerged.

Georgia, Richmond: All the lands bordering the Savannah River below Augusta were overflowed June 16 to 19, and crops of all kinds are a total loss. Some plantations report a loss of 5,000 to 10,000 bushels of corn, of which an unusually large amount was planted, and the crop was 10 per cent. above average at the time of the freshet.

Illinois, Woodford: Crops of all kinds looked encouraging thirty days ago; but now, owing to the extraordinary rains, everything in the agricultural line looks discouraging. All low lands are flooded, and the water is destroying whatever is planted thereon. The water-courses are higher than were ever before known by the oldest settlers.

Wisconsin, Dunn: From May 2 to June 26, rain fell during 167 hours on the bottoms of the Chippewa; during May 16, $6\frac{1}{2}$ inches in 12 hours. *Juneau*: Rain-fall greater than for sixteen years. *Outagamie*: Rained for two-thirds of June.

GRASSHOPPER-EXTERMINATORS.—*Nebraska, Hall*: The first English sparrows were imported into this county, from New York, by me this spring. They are now doing well—parents and children.

INCREASE OF GRAIN-CROPS.—*Georgia, Columbia*: We are making more small grain in this section this year than in all the years since the war aggregated. The cotton mania is subsiding, and the disposition to terminate dependence on heavily-taxing merchants is becoming general. Thereby shall we have better times. *Randolph*: More grain planted by 25 per cent. than in any year since the war. *Wilcox*: The people have gone more into provision-crops, and they are doing quite well all over the county.

Alabama, Henry: Our people are becoming convinced that planting too much cotton is ruinous, and will soon plant still more largely corn and small grain. There is among them an evident tendency to practice more rigid economy, and I think they will raise most of their supplies of every kind at home.

Michigan, Iosco: This county is rapidly changing from a lumbering to a wheat and stock-producing county. Merchants and other business men are turning their attention to farming.

CUBA TOBACCO.—*Florida, Gadsden*: Last year's crop of Cuba tobacco, which was the largest and the best that has been grown since the close of the war, still lingers on the market at greatly depressed prices. As a consequence, many of the planters have measurably abandoned its cultivation the present year.

From my experience and observation in the growing of the Cuba tobacco, I am astonished that it is so much neglected by the manufacturers of cigars. I have recently had an opportunity to examine the stock in a large factory, and am convinced that the production of Gadsden County, both as to texture and flavor, is superior to the average article used by them and may be bought at one-half the cost. Here is a favorable opportunity for some enterprising party to realize a fortune by establishing a cigar-factory in the midst of the tobacco region of the State, where he can make his selections at the barns.

AGRICULTURAL SPECIALTIES.—*Maryland, Montgomery*: A large and increasing number of the best farmers in this county are devoting their attention to the dairy. *Wicomico*: In recent years watermelons are raised in our county and exported to northern markets in very large quantities.

Virginia, Chesterfield: Onions are becoming a very important crop. The potato-onion yields 75 to 125 bushels per acre, worth \$1 to \$2 per bushel. *Southampton*: The cotton-crop has been greatly curtailed, and its place taken by pea-nuts.

Indiana, Floyd: The crop of onions is very fine, though decreased in acreage.

Illinois, Montgomery: The honey-crop is very heavy.

Wisconsin, Clark: More attention to dairying and fine grades of cattle.

Missouri, Vernon: The crop of castor-beans is late and foul with weeds. It will be shortened fully half.

UNTIMELY ICE.—*Wisconsin, Douglas*: An immense ice-field, twenty to thirty square miles in area, still at the head of Lake Superior, (July 1.)

AGRICULTURE AT THE CENTENNIAL EXPOSITION.

At the Centennial International Exposition, now in progress at Philadelphia, agriculture may be studied in two complementary aspects. In the building erected by the General Government, the National Department of Agriculture has organized a special exhibit, of which an account was published in our June report. In this exhibit the leading facts and principles of American agriculture are presented in compact logical generalizations. The results of production are shown in classified specimens or *fac-simile* imitations showing the processes and products of culture. The natural agencies, organic or inorganic, which favor or impede the work of the farmer, are shown by a great variety of samples. Statistical charts on a large scale compare the latest results with those of former years, illustrating the annual progress of production and the changes which time is continually working in this oldest and most fundamental of all human industries. This exhibit, while constituting one of the most attractive features of the Exposition for the general public, is especially interesting to thoughtful minds seeking reliable general ideas of our material resources. The statistics which sum up and compare our annual products are of special value to commercial men as giving more clear and definite ideas in regard to the trade in farm-products, while intelligent agriculturists find new facts and principles of culture and new relations between the different branches of their varied industry developed in the statistical investigations of which the results are on exhibition in the Government building.

At Agricultural Hall, on the contrary, the subject is presented from an antipodal stand-point. The miscellaneous collections of private exhibitors embrace a vast amount of details arranged under a previously-devised classification, but it is evident that in a large number of cases objects are brought within the programme only by a very liberal construction of its requirements. A complete and systematic exhibit could scarcely have been anticipated. It is not a comprehensive selection from the multitudinous facts of agriculture of those general features which accurately present the true character of the whole system, but rather a miscellaneous aggregation of such specimens of production as the private interests, public spirit, and special facilities of exhibitors have induced and enabled them to present in response to the invitation of the Centennial Commission. Hence its indications need careful interpretation, having regard not only to its excellencies, but also to its deficiencies. A great redundancy of specimens is found in some branches and a noticeable lack in others. But the full treatment of the subject requires time, diligent research in gathering facts, and deep study in drawing conclusions. The history of the Exposition cannot be even commenced until after its operations shall have been concluded. All that can be justifiably attempted in a sketch like the present is to trace the leading features, to indicate something of its scope and extent, and to give some conception of the wonders of art and nature now presented at this branch of the Centennial Exposition. A brief notice of its general organization will give some relative conception of the part taken in this enterprise by the agricultural interest of our own and of foreign countries.

The grand exposition occupies an inclosed portion of Fairmount Park, embracing 236 acres. Five immense structures have been provided by the Centennial Commission for the exposition of the industry of all

nations; but, besides these, several smaller expositions by the General Government, by separate States, by foreign countries, and by private corporations and individuals for the exhibition of their particular products, either in whole or in part. Of the Centennial Commission buildings, the largest and most striking is the Main Exhibition Hall, 1,880 feet long, 476 feet wide, and covering, with its various annexes, nearly twenty-five acres. This building is devoted to the first three general departments of the exhibition, viz: I, Mining and Metallurgy; II, Manufactures; III, Education and Science. Department IV, Art, occupies a noble structure of marble, erected by the State of Pennsylvania and city of Philadelphia, to perpetuate the memory of this illustrious, patriotic, and industrial enterprise, and hence fitly named Memorial Hall. It is loaned to the Centennial Commission for exhibition purposes, but it will remain one of the great centers of art exhibition in ages to come. It is 365 feet long and 210 feet wide; with an annex in the rear, it covers nearly three acres, and contains an unexpectedly complete representation of all the national schools of art in Europe and America. Department V, Machinery, occupies an immense building 1,402 feet long and 360 feet wide, covering, with its annexes, nearly fifteen acres. Department VI, Agriculture, is accommodated in Agricultural Hall, a unique structure near the northern apex of the exposition inclosure; it is 826 feet long and 540 feet wide, covering ten and a half acres; but the space devoted to this class of exhibits is enlarged by several annexes, adding two or three acres to the covered area. Besides these accommodations within the inclosure, a tract of twenty-one acres outside has been arranged for the exhibition of live stock at different times during the exposition. Trials of agricultural implements and machinery are arranged at points within easy railway access in the neighboring rural districts. Department VII, Horticulture, finds accommodation in a beautiful structure 383 feet long, 193 feet wide, and covering one and a half acres. About forty acres outside the building have been devoted to out-door plants, to garden arrangement and decoration, and to the illustration of different systems of landscape gardening.

It will be seen, then, that two of the seven general heads of classification pertain to soil production. Several branches of manufacture in machinery hall and a large number of products, either in the main hall or in buildings of States, corporations, and individuals, would naturally come under these heads, especially the extensive exhibit of Kansas and some other States. The horticultural exhibition embraces classes numbered from 700 to 739; of these the first ten include ornamental trees, shrubs, and flowers; the second ten, hot-houses, conservatories, and graperies; the third ten, garden tools and accessories; the fourth ten, garden designing, instruction, and management. The exhibits in this department are mostly American. Great Britain contributes two exhibits of ornamental trees and shrubs; Canada, seven exhibits of gardening appliances; France, seventeen exhibits of ornamental shrubbery, conservatory and garden appliances, and plans of garden construction and arrangement; the Netherlands, six exhibits of fruit and ornamental trees, &c.; Sweden, one exhibit of garden tools; and the Argentine Republic, six exhibits of ornamental trees and garden designs. The total of foreign exhibits is thirty-nine, and of American, one hundred and thirty-nine. The exhibits of this department are arranged in admirable taste, and indicate a great advance in horticulture. The methods of garden construction and management, especially in the higher elements of design, are well represented.

The department of agriculture embraces one hundred classes, num-

bered from 600 to 699. Of these, the first ten include arboriculture and forest products; the second ten, pomology; the third ten, agricultural products; the fourth ten, land animals; the fifth ten, marine animals, fish-culture, &c.; the sixth ten, animal and vegetable products; the seventh ten, animal and vegetable fibers; the eighth ten, machines, implements, and processes of manufacture; the ninth ten, agricultural engineering and administration; the remaining ten are devoted to tillage and general management. The total exhibits under these classes are from the following countries: United States, 696; Great Britain 73; Canada, 297; France, 224; Germany, 161; Austro-Hungary, 53; Switzerland, 24; Belgium, 38; Netherlands, 72; Sweden, 85; Norway, 77; Italy, 259; Brazil, 260; Argentine Republic, 632; total, 2,951. The aggregate of the Argentine Republic is especially remarkable, nearly equaling that of the United States. The great majority of these last-named exhibits consist in forest and agricultural products and their preparations, especially textile fibers. There are memorials of a wonderful luxuriance of production, mostly spontaneous. Very few processes are illustrated by specimens, and no implements or machinery are presented except a single model of a pump. Grand capabilities of production are here indicated, with but little of systematic effort to realize their results.

Arboriculture and forest products.—Under this head the United States presents several collective exhibits remarkable for their value and fullness. Kansas has a very fine display of timber from her scanty woodlands. Indiana presents a collection embracing all kinds of timber found in the State. Oregon, Iowa, Delaware, West Virginia, and Michigan show similar exhibits, but not so systematic or complete. The National Timber Preserving Company, of Philadelphia, exhibit their chemical method of timber-preservation. The Eastern Burnetizing Company illustrate their method of wood-preservation by forcing a solution of chloride of zinc into the pores, after having previously expelled the air and sap. It is claimed that the chemical enters into permanent combination with the ligneous fibers, hardening and improving their texture. Canada has a fine collection of rough and sawn timber arranged in a building. Several of these are manufactures of wood, illustrating rather mechanical processes than original growth. Germany sends a specimen of manufactured resins; Austria, two specimens of manufactured wood, and some saffron; Netherlands, some sieve-frames, cork, and a plant one hundred years old; Sweden, some fir timber, grown at latitude 67° , and a regular sylvicultural collection; Norway, some specimens of wood and its manufactures; Italy, seeds, nuts, leaves, &c.; Brazil, a variety of samples of native woods and of lumber prepared for market. The Argentine collection is especially full, embracing numerous systematic collections illustrating the arboretum of large provinces.

Pomology.—The exhibit of Pomology includes fruits of the tropical, semi-tropical, and temperate regions. A separate building, called Pomological Hall, has been erected, and connected with Agricultural Hall by a covered way. It is 200 feet long and 180 wide, giving facilities for the display of 8,000 dishes of fruit at one time. For the exhibition of fresh fruits in their season, special occasions were designated by the Centennial Commission, as follows: For pomological products and vegetables, May 16 to 24; strawberries, June 7 to 15; raspberries and blackberries, July 3 to 8; Southern pomological products, July 18 to 22; melons, August 22 to 26; peaches, September 4 to 9; Northern pomological products, September 11 to 16; autumn vegetables, September 19

to 23; grapes, October 10 to 14. Foreign exhibits in this kind of perishable articles are necessarily very scanty. Canada shows some cranberries and a collection of apples and pears modeled in wax; France, a few fruits; Austria, a remarkable combination of currants and gooseberries growing upon the same stem, with some fresh grapes and Turkish prunes. Italy shows some oranges and olives. The cranberry region of New Jersey is represented by some fine specimens. A collection of wax models of apples and pears of Iowa is presented by the board of agriculture in that State.

Agricultural products.—The next head of the classification embraces the direct products of soil-culture, except textile fibers. Several States presented collective exhibits of their capacities for general culture, more or less full. The most prominent of these special exhibits is that of Kansas which, with the Territory of Colorado, occupied a separate building. The specimens are labeled with great care, giving the county, residence, and name of the party by whom they were grown. The yield per acre in each county, from the records of the State agricultural department, is furnished on application. A large map of the State, spread out upon the wall, enables the inquirer to locate each county and to gain very clear ideas of the agricultural character of the State. Wheat stems are shown from 5 to $6\frac{1}{2}$ feet high, with heads 3 to 6 inches long; corn-stalks 13 to $17\frac{1}{2}$ feet high, with ears commencing 10 feet from the ground; oats, 5 to $6\frac{1}{2}$ feet high; rye, 5 to 7 feet high; broom-corn, 18 feet high; blue-grass, 3 feet 4 inches high. The collection of grasses embraces 14 wild varieties, commencing with buffalo grass 6 inches high, and ending with blue-stem prairie-grass over 10 feet high—"too big for hay, but not quite big enough for cord-wood." Clover from 4 to 5 feet high, and ears of corn 12 to 15 inches long, have ceased to astonish the natives of this region. One stalk of corn had 13 ears and another 7. Iowa exhibited a fine collection of cereals, grasses, vegetables, seeds, &c. A remarkable feature in this Iowa exhibit is the collection of specimens of soils from 35 different counties in sections 6 feet deep. Massachusetts, Indiana, Michigan, Delaware, Ohio, and West Virginia also present collective exhibits of soil products. Oregon accompanies a similar exhibit with a printed statement of her resources, in which cereals and grasses are especially prominent. Wheat crops have not been known to fail during the thirty years since the settlement of the State. Neither weevil, smut, nor drought have been known to any extent; the grain is said to attain the weight of 69 pounds per bushel, and oats 45 to 50 pounds; good wheat lands, with good cultivation, yield from 26 to 45 bushels per acre; barley, 40 to 70; oats, 68 to 80. These statements are guaranteed by the Oregon State Board of Immigration. Arkansas has a collection of soil products in a separate building, and distributes publications showing the extent and value of her agricultural resources. The grain production of this State is developing remarkably, while its grass crops are unexcelled by any other State. Corn 14 feet high, and grass 7 feet high, are noted in the history of a recent editorial excursion by newspaper representatives of several Eastern and Northern States. Among large vegetables seen by these tourists, cucumbers weighing over 60 pounds each were noted. The Western North Carolina Land-Company has a collection of cereals, grasses, &c., of the section it represents. Corporations and individuals exhibit specimens of special production of great interest and value to the student of our agricultural resources; some of these, however, have not been rightly located in the catalogue.

England sends a very small list of products of this class, but among these is a very promising new variety of white wheat called "Mainstay"

wheat." Though hardy and robust, it produces a grain of remarkably fine quality. It resists the rapid alternations of temperature to which in later years the British climate has become subject; blight and frost have but little influence upon it; it stands the roughest weather in harvest time, and, if desirable, may be left uncut till after barley harvest. In view of the late degeneration in the finer qualities of British wheat, of which complaints have been rife, this variety is looked to with considerable hope, as promising a partial or total restoration of the normal standard of production. It is adapted to either fall or spring sowings, but seed should be selected of grain sown at the same time as the seed-ing proposed; that is, spring crops should be sown with grain raised from previous spring sowings, &c. Yet the seed rapidly adapts itself to a change in the time of sowing. The wheat yields 82 per cent. of flour, which embraces 63.4 per cent. of fat-forming substances, 21.5 per cent. of flesh-forming substances, 13.2 per cent. of water, and 1.9 per cent. of inorganic matter. Canada exhibits a considerable variety of seeds, grains, &c. The French exhibit is very scanty, while those of Germany and Switzerland are confined almost entirely to tobacco and its preparations; Austro-Hungary shows seed, grain, and hops; Belgium shows cocoa and chicory, with a few cereals; the Agricultural Association of Netherlands, and the Dutch Agricultural Society, have collective exhibits, while individuals and corporations present a few features of agricultural production. A much more extensive exhibit is shown by Sweden, including cereals, grasses, forage plants, tobacco, &c. Several distinct societies have collective exhibits of great interest. Norway has a few specimens of cereals and manufactured tobacco. Italy shows grain, rice, and seeds. Brazil exhibits a very great variety of her peculiar tropical and semi-tropical products, together with grains, vegetables, and grasses from her temperate southern provinces. Tea is grown here, but its ordinary substitute, maté, is represented by numerous specimens. Coffee and tobacco culture are extensively represented. The Flumineuse Agricultural Institute shows tea made from coffee-leaves. Several collections of medicinal plants illustrate the therapeutic resources of the Brazilian flora. The Argentine Republic presents a large number of specimens of cereals, mostly wheat, with grasses, tobacco, and vegetables. Several of these exhibits are collections illustrating the productions of considerable districts. Sugar-cane, mandioca, tapioca, coffee, and tobacco appear among the catalogued products.

Farm-animals.—The exhibitions of live stock will be in the live-stock inclosure, outside the exposition-grounds. For horses, the exhibition will be from September 1 to 14; for dogs, September 1 to 8; for neat-cattle, September 21 to October 4; sheep, October 10 to 18; swine, October 10 to 18; poultry, October 27 to November 6. Of land-animals generally quite a number of entomological, ornithological, and other collections are on exhibition, some of which are of decided merit, especially those of the Michigan State Agricultural College and of the Allentown (Pennsylvania) Academy of Natural Sciences. From England, Lord Walsingham shows Southdown ewes and rams. From Canada comes a fine museum of Canadian entomology, by the Entomological Society of London, and several private zoological collections by individuals in different sections. From Vienna, Austria, comes a treatise on the history of bees. Norway shows photographs of Thelemark cattle, with a printed statement of the qualities and economic character of this (almost the only) national breed of that northern region. The Argentine Republic has a large list of exhibits of preserved specimens of zoology, showing some of the peculiarities of her southern fauna.

Of water-animals, fisheries, and of fish-culture and apparatus, the exhibit is quite extensive. The most striking exhibition under this head is by the city of Gloucester, Mass., which claims to stand at the head of the fishing-ports of the whole world in the extent of her operations, the admirable model and construction of her clipper-vessels, the elaborate facilities for preparing her products for consumption and for placing them upon the market, and, finally, for the enterprise, daring, and skill of her fishermen. Her exhibit at the Centennial Exposition consists of a tank of water, in Agricultural Hall, twenty-three feet long and twelve feet wide, upon which float correct models of her fishing-fleet of both olden and modern times. A miniature wharf of modern construction and a cob-wharf, representative of past days, very strikingly illustrate the progress which has marked this branch of productive enterprise. A graving-dock and marine-railway running down into the water greatly lighten the labor of landing the finny cargoes; miniature crews of model fishermen, clad in garments peculiar to their avocation, present characteristic scenes of the Gloucester fish-trade. Specimens of the products and machinery of fishing, with minerals, mosses, shells, corals, &c., from the sea are ranged around the tank. The statistics of this port for 1875 show a total fish-production of \$3,909,500, of which about half represents the cod-fisheries, and one-sixth mackerel, and nearly one-sixth halibut; the remainder consists of herring, hake, shell-fish, &c.

In the Agricultural Hall large glass aquaria are provided for the accommodation of numerous fresh and salt water animals. These aquaria are themselves exhibits, showing the most scientific methods of preserving live fish. Casts of fossil-fish and marine animals are numerous. Preserved products of the fisheries come from different parts of the country, together with fishing-apparatus and prepared bait. A fish-hatching apparatus from Northville, Mich., illustrates an important improvement in economic civilization. From England the official catalogue notes only specimens of emasculated salmon. Canada shows a considerable number of fishery-products, together with some improvements in fish-catching. France shows numerous fish-products, mostly preserved sardines; one exhibit consists of pearls. Austro-Hungary has some preserved fish, and Netherlands some fishing boats, hooks, &c. Sweden and Norway excel all other foreign countries in the extent and variety of their exhibit under this head. The Swedish Royal Centennial Commission have a collection of fishes living in Swedish waters. Fish-products and processes of fishing are numerous. The Museum of Bergen, Norway, presents a collection of zoological memorials especially rich in the marine and fresh-water animals. Fish-products and fishing-apparatus are shown in numerous and elaborate forms. Among the latter is a unique fishing-sled from Christiania. Italy shows a few eels and sardines in oil. Brazil exhibits isinglass, and the Argentine Republic sea-shells and fishing-lines and baskets.

Animal and vegetable products.—This is an extensive list of exhibits, including preparations of animal flesh, milk, tissue, oils, &c., and numerous vegetable products. The great pork establishments of the West make a fine display of their products, while the glue and candle factories of the East exhibit very creditable specimens. One exhibitor proposes to obviate "the peculiar and unpalatable *piggy* flavor so noticeable in most hams" by a delicate flavoring in the process of cure in combination with pure white powdered sugar. Brands of cooked meats, biscuits of fish-flour, and specimens of mince-meat, illustrate the economic direction of art in the preparation of animal food. One ex-

hibitor showed models of the old cracked Independence bell, of eagles, hogs, &c., made of lard, hardened to resist heat and whitened to the beauty of the purest Parian marble. This head also includes an immense variety of vegetable preparations, of dried and canned fruit, farina, flour, meal, canned vegetables, pickles, relishes, sauces, sirups, starch, maple sugar and molasses, beet-sugar vinegar, wines, spirituous and malt liquors, confectionery, bread, cakes, yeast, vegetable oils, &c. The exhibition of English goods under this head is as varied, if not as extensive, as that of the United States. One English exhibitor has on exhibition a preparation of starch with which he proposes to render fabrics and timber uninflammable. He distributes condensed tea and coffee, flavored with milk and sugar, in capsules, one of which will transform a cup of warm water into a cup of either beverage. He has other equally wonderful combinations, for which space is wanting in this report. Canada, among animal products, exhibits skins, leather, preserved meats, &c. Of vegetable products she shows a great variety of flour, meal, starch, vermicelli, preserved fruits and vegetables, wines, spirituous and malt liquors, &c. France presents cheese, leather, (of which a large special exhibit comes from Saint Saems, Seine-Inférieure,) preserved meats; of vegetables her collection includes preserved fruits, confectionery, wines, liquors, vegetable oils, &c. Germany confines her exhibit of animal products mostly to leather; of vegetable products she reports some preparations of cereals, grape-sugar, chocolate, &c., but her great specialties are wine and beer. Austria shows hops, seeds, and cereals; Switzerland, leather, honey, wax, preparations of coffee, chocolate, sauces, absinthe, and other liquors; Belgium, oils, leather, beet-sugar and its preparations, vinegar, wine, cordials, bread, &c.; Netherlands, cheese, horn, glue, medicinal animal oils, feathers, canned fruits and vegetables, flour, bread, chocolate, sugar from grapes, potato-meal, wines, liquors, beer, vegetable oils, &c.; Sweden, dairy products, glue, leather, flour, starch, bread, sugar, confectionery, liquors, (especially whisky from reindeer moss,) vinegar, punch, &c.; Norway, condensed milk, crackers of fish-meal, preserved old cheese, leather, preserved meat, preserved vegetables, spirituous and malt liquors, &c.; Italy, cheese, sausage, albumen, hides, leather, honey of orange-flowers, preserved meats, fruits, dried, candied, and in alcohol; vegetables, sauces, relishes, seeds, bread, flour, pickles, vinegar, wines, liquors, sugar, confectionery, &c.; Brazil, hides, horns, furs, leather, glue, oil, tallow, medicinal plants and roots, coloring-matter, manioc-flour, fruits, vegetable oils, sugar, confectionery, cocoa-oil, vinegar, wine, aguardiente, coffee-liquors, peach-liquor, chocolate, &c.; Argentine Republic, sponges, leather, ostrich eggs and feathers, honey, cheese, butter, hides, furs, animal charcoal, milk extract, dried fruits and nuts, flour, starch, manioc-flour, wines, liquors, vinegar, sugar, confectionery, &c.

Wines and liquors.—The extent of the wine and liquor exhibit invites a more extended notice. The number of American exhibitors is large and representative of a vast capital invested. Several large wine establishments located in the Eastern and Central States make an imposing display of their products. It is noticeable that the wine-making industry tends to crystallize around certain prominent points, but the greatest development of this industry is in California. Here are the most extensive grape culture and wine manufacture. One company in this State has 6,000 acres of land planted mostly in grapes, though as yet but 450 acres are in bearing. This company, in order to secure a perfectly homogeneous and even character for their wines, do not purchase grapes of other producers, but confine themselves to their own

vineyards. Their cellars contain about half a million gallons at one time. Their goods are marketed in California, the States east of the Rocky Mountains, Central and South America, Australia, and China. Some of the finer varieties of these wines are shipped to Europe. In this region European varieties of the grape, such as cannot be grown in the Eastern States, grow in great abundance; but a leading favorite is found in the old Mission grapes of Spanish origin, acclimated by the Roman Catholic missionaries when California was an integral part of Mexico. In the Eastern States only American varieties of the grape can be successfully grown. The leading localities of wine-manufacture here represented are around Egg Harbor, N. J.; Hammondsport, N. Y.; the southern shore of Lake Erie, with adjacent islands in Ohio and several local points in Missouri. Kelley's Island, in Lake Erie, with an area of about 3,000 acres, produces Catawba grapes in greatest perfection and manufactures a superior quality of Catawba wine. Alcoholic distillation from molasses is prominent in New England, and from grain in the central and western grain-producing States; but this industry is but imperfectly represented in the Centennial. Of malt liquors, the exhibit at the restaurants and drinking-stands is far more varied and extensive than in the Exposition Hall. In fact, the consumption of lager is simply stupendous, illustrating the wonderful capacity of the human stomach and the great development of appetite for this Teutonic beverage. Several economic hop-extracts are noted among American exhibits. One of our American exhibitors presents a specific cordial, intended to supersede European cordials.

England exhibits only one kind of wine, extracted from freshly-gathered cowslip-flowers in Leicestershire. It is used mostly for medicinal purposes as a gentle tonic, its alcoholic strength being about equal to the mildest claret. Irish and Scotch whiskies are shown. Koumiss, an extract of cow's milk, imitated from the preparation of mare's milk by the Tartars, is one of the alcoholic preparations on exhibition. Malt liquors in great variety, the characteristic beverages of the fast-anchored isle, are represented by numerous samples. Canada shows a few brands of native wine, some ale, porter, and malt, and some products of distillation. The wine exhibit of France is such as might be expected from the enormous production of that country. Prominent among the regions in which this industry is prosecuted is the famous champagne district, including about four departments of France, viz, Ardennes, Marne, Upper Marne, and Aube. This district extends from Mézières on the Meuse, across the valleys of the Aisne, the Marne, the Loire, the Aube, and the Seine, nearly or quite to the confines of Lower Burgundy. But this extensive region is subdivided into the "poor" and "rich" champagne, the former extending northward from Rheims and the latter confined to the valley of the Marne, embracing about 50,000 acres in vineyards. The vineyardists within this region very dogmatically assert that no real champagne is found outside of the department of the Marne, but wine connoisseurs of accepted authority both in Europe and America declare that much wine of the neighboring districts if branded "Goutte d'Or," "Moque-Bouteille," "Côte-a-bras," or "Closet," would pass the most experienced wine-tasters without challenge. The name Sillery has long outlived the excellence of which it was once an ample guarantee. The choicest vineyards of the establishment have fallen into inferiority by actual mismanagement. Epernay, a few miles west of Chalons, is the great center of the champagne production. Here from 30,000 to 36,000 acres of vineyard, cultivated with extreme care, furnish the

material from which this famous wine is manufactured. Something in the character of the soil and modes of culture give especial delicacy of taste and peculiar bouquet to the juice, which qualities are preserved and intensified by careful and scientific manipulation. About one-fourth of the vineyards are planted with the white grape and three-fourths with the black grape, but both produce white wine, the juice of the black grapes being drawn from the press before the coloring-matter of the skins has mingled with it. In an unusually good year, when the black grapes are especially mature, the wine receives a slight pinkish or amber tinge, which is regarded as an evidence of extra good quality. The best growth of black grapes is found at Ay, Mareuil, Champillon, Hautevillers, Dizy, Epernay, Pierry, Camières, and Aveney-on the Marne; and at Bouzy, Verzenay, Sillery, Mailly, and Rilly, on the mountain of Rheims. The best white grapes are grown at Cramant, Avize, Le Mesnil, Oger, Grauvés, and Cuis, to the south of Epernay. Other celebrated wine-districts are also represented by numerous samples—Bourdeaux, Burgundy, Jura, Saumur, &c. The most celebrated brands of brandy, eau-de-vie, and other preparations of alcoholic drinks, are also on exhibition. In some cases there are collective exhibits by municipal or other corporations. The catalogue, however, contains no mention of malt liquors from France. The Germanic taste for beer seems to have been eradicated from the Frenchman, whose tastes are rather those of the Peninsular-European races, with whose blood his own is so largely mixed. Germany presents a large array of local brands of wine, alcoholic and malt liquors. The last are especially noted in a collective exhibit from Bavaria, representing the leading brewers of that kingdom. The rich wine-production of Austro-Hungary has but few representatives at the Centennial, and the alcoholic and malt liquors fewer still. Switzerland concocts the diabolical green and white absinthe. Belgium sends a few cordials and one or two brands of beer; Netherlands, gin of the Schiedam brand, and some elaborate alcoholic preparations; Sweden, whisky from reindeer-moss, ale, and prepared punch; Norway, alcoholic and malt liquors. Italy has a long list of wines and spirituous liquors; but none of malt. From Brazil comes aguardiente, from sugar-cane, and also spirits extracted from maté and quinces. A few wines are noted, but not of a generally-known character. The Argentine Republic sends chacoli wine, aguardiente, cherry-liquor, &c.

Textile substances, animal or vegetable.—Our great southern staple, cotton, is presented mostly in collective exhibits, embracing all the local varieties of this country, with a large representation of the fibers grown in foreign lands. Hemp, flax, wool, shoddy, curled hair, bristles, horse-hair, hair-moss are also shown in great variety. England shows wools, Indian rhea, and other fibers, including wool made from old rags, called in this country shoddy; Canada has wool, flax, and hair, and fabrics made from them; France has raw silk and cocoons; Germany, merino wool and horse-hair; Belgium, flax, wool, and white bristles; Sweden, flax rotted by chemicals; Italy, raw and combed hemp; Brazil had a handsome display of cotton, which was consumed by accident, threatening a general conflagration; also hemp-flax, jute, wool; hair, animal and vegetable; silk and silk-worms, tow, flax, &c.; Argentine Republic, cotton, chaguar thread and bark, yuchan-fiber, caraguatá-fiber and fabrics made of it, silk and cocoons, flax, wool, angora fleece, alpaca wool, cow-hair, hair-ropes, &c.

Machines, implements, and processes of manufacture.—In this department, which occupies almost half the building, American inventive genius

is almost alone in the field, exhibiting acres on acres of farm implements and machines, many of which were in motion, being driven by steam. From the nature of these exhibits and the absence of shelving and stand inclosures a better general view of this branch of the exposition is practicable. It is impossible to describe the animation of the scene and the remarkable beauty of the machinery upon which the resources of decorative art have been lavished. The smaller implements are arranged in cases, frequently showing fine artistic taste in their arrangement. Even the large machines are arranged with reference to picturesque effect upon finely-carpeted stages, in remarkable contrast with the rough field-work in which they find their legitimate exercise.

In the official catalogue the first class embraces machines and implements of tillage, such as spades, hoes, rakes, and other tools, plows, cultivators, rollers, harrows, pulverizers, propelled by animal force, and the same, on a larger scale, propelled by steam. Hand-tools are exhibited in endless variety of shape and material. It would seem that inventive genius has anticipated the necessities of soil-culture, and has imagined itself in all possible circumstances, to enable it to detect the difficulties and to facilitate the execution of labor. Spades, shovels, forks, axes, hatchets, hoes, hand-rakes, are arranged in almost every conceivable shape that would overcome or diminish the resistance of the ground. For the breaking-up and pulverization of the soil, plows, cultivators, harrows, rollers, pulverizers, &c., exhibit not only extensive adaptations of old principles, but also new inventions and principles whose validity is yet to be tested in practice. The latter contrivances aim at the accomplishment of the same work with less resistance and consequent expenditure of power, or an increased efficiency with the same exertion. Contrivances to lessen or overcome side-draft, and to utilize the whole motive-power in the direct work of the instrument, indicate one of the objective points of invention. The adaptation of plows to hill-side work, by shifting the mold-board in alternate directions, is an important specialty contemplated in the improvement of tillage. Mold-boards are made of peculiar combinations of metal, having the least practicable affinity for water and mud, in order to meet the requirement of wet, swampy soils. The sulky-plow invites the plowman to an elevated seat, from which he can direct the movement of the instrument and at the same time enjoy the pleasure of a ride. This saving of muscular force in the laborer is in the direction of modern civilization, which as far and as fast as possible relieves the tasks of elementary production. The swivel-plow, leaving no dead furrows, has enlisted many bright, inventive minds in its perfection. Plows adapted to heavy excavation, for railroads and other great enterprises, are constructed on principles differing in some aspects from those of plows for tillage. All of these necessities appear to have been appreciated, and combinations of form and material suited to these circumstances are quite numerous. Experiments with steel and chilled iron have been so far satisfactory as to cause a large investment in plows of these materials. One manufacturing company has invented a new metal for mold-boards, called carbon, a mixture of refined steel, wrought iron, and other metals, which, it is claimed, is harder than steel or any surface-chilled iron. A singular novelty is found in what is called the rotary gang-plow. The mold-board is in the shape of a truncated cone, the edge of its wider diameter being sharpened and made to revolve around the axis of the cone. Its plane of movement is parallel to the line of draft and its sharp edge cuts a furrow whose depth is regulated by a simple mechanism. It may be either directed by handles, as in old-fashioned plows, or it may be

furnished with a seat, like a sulky-plow, and the plowman may ride at ease. A plowman of very ordinary skill is competent to manage this implement. It may be set to turn two furrows, by attaching two rotary mold-boards to the machine. Such are some of the points set forth in this novel invention, but it evidently requires a more complete trial and a more perfect adjustment, in order to meet the requirements of an expanding agricultural enterprise. The enormous extent of plow-manufacture is indicated in the statement of a new firm, making chilled-iron plows in the West. In 1871 they made 1,506 plows; in 1872, 3,049 plows; in 1873, 7,472 plows; in 1874, 14,976 plows in 1875, 31,077 plows. The orders received during 1875 exceeded the production by 10,000. The manufacture for 1876 has been fixed at 75,000 plows as a minimum. Other statements, equally well attested, indicate a similar increase in the production of plows by other firms. The cultivator has become not less important to the farmer than the plow itself, and forms no less elaborate, embodying the latest application of economic principles, are observable in this branch of production. A machine for pulverizing the soil, constructed like a harrow, with circular, sharp disks, instead of teeth, revolving upon shifting axes, is one of the novelties in this line of construction. Harrows are also exhibited in great variety and construction, both solid and jointed. In nearly all these cases the plow or cultivator is to be driven only by horse-power. No steam-plows are on exhibition by American exhibitors, as far as shown by the catalogue.

The next class of implements have relation to planting. Broadcast sowing still has its advocates and adherents among farmers, and to meet this requirement broadcast seeders are still invented, constructed, and sold. One hand-machine is offered at the Centennial which proposes to sow from 4 to 8 acres per hour. The same machine mounted on wheels and drawn by two horses, it is claimed, will seed from 10 to 15 acres per hour. It casts wheat from 30 to 36 feet; barley, from 27 to 33 feet; hemp, from 27 to 30 feet; and generally a heavy seed is thrown further than a light one. Another combines a cultivator with the sowing apparatus in order to break up corn-stalk ground without plowing. But broadcast devices are not numerous at the Exposition, while the drill is found in an immense variety of adaptations. Exhibitors, of course, are profoundly convinced of the superiority of their own machines, and it is not proposed in this article to pass any judgment upon their conflicting claims, but to indicate some leading characteristics of the wares on exhibition. The points of excellence claimed by different machines have respect, mainly, to the regulation of the depth at which the seed is deposited, and of the flow of seed through the pipes. The devices for forcing feed are put forward as prominent advantages by several exhibitors. Arrangements are made by which hoes are deflected by accidental obstructions, such as stones, &c., without breaking. In some cases the quantity of seed discharged through the pipes is regulated automatically by an arrangement in the gearing which may be altered if desirable; in other cases the quantity is regulated by the driver. By a simple contrivance, involving a very slight adjustment, the drill may be transformed into a wheel-hoe. A separate box for the distribution of some concentrated fertilizer with the seed is put forward as an especial excellence of some machines. Specific improvements are claimed in the method of gearing, in the arrangement of the draft, reducing resistance to a minimum, in the materials of which different parts of the mechanism are constructed, in securing a perfect equilibrium when in motion, in perfect ease in operating, in the elimination of straws and other ob-

structions from the seed by spiral wheels or otherwise, in automatic adjustments to suit grains of different kinds and sizes, in the thorough covering of the seed and leveling of the ground after sowing, &c. Corn-planters specially adapted to the seeding of maize are also present in considerable numbers. In some, the seedsman holds the machine to its work by means of handles like those of the plow. In others, he rides upon the machine and regulates its flow of seed by an easy adjustment with either hand or foot. One machine carries an attachment which traces the line of the next seeding-furrow exactly 4 feet from the previous one. For planting in check-rows automatic arrangements are claimed by some exhibitors; while others place this function in charge of a supernumerary man or boy riding on the machine. The corn-plauter is also combined with a cultivator-attachment, so as to save plowing in the corn-stubble by thoroughly stirring the surface. No adaptations of seed-machinery to steam-power are noted among this class of exhibits. A few attempts to combine the drill and broadcast methods so that the same machine may answer different and even incongruous purposes, shows the extent and scope of our daring inventive genius.

The most extensive array of farm-machinery falls under the head of harvesters. A few of the machines are devoted to the single function of mowing. In those parts of our country where grain is grown to only a limited extent, and where grass is the staple crop, an implement suited only to mowing, as might be expected, can be constructed with less machinery and of less complicated character than where it is proposed to save the expense of two instruments by combining with the mower an attachment for gathering the grain for bundling. The mower is presented of every size and combination, from the simple lawn-mower, which a single man can drive, to the ponderous two-horse machine. The lawn-mowers are generally combined with a roller-attachment for leveling the ground at the same time the grass is cut. Sometimes these instruments are so large as to require a single horse to supply the motive power, in which case the operator may drive the machine, seated upon it, or he may direct it by means of plow-handles, walking behind it. Of the field-mowers, some employ the direct-draught principle, the knives being located between the wheels, the horses being placed widely apart, entirely outside the swath, by means of a long neck-yoke and double-tree. It works back and forth on the same side of the field. Another machine adapts the side-draught principle, with no purpose of transforming it into a reaper. It claims to have secured, by a new mechanical movement, the easy conversion of the slow rotation of the wheels into the rapid reciprocating motion of the knife, and a noiseless action which the side-draught mowers convertible into reapers cannot attain.

But when grain and grass farming are combined on a moderate scale the economic advantage of a machine which, by a simple adjustment, may be adapted to either kind of harvesting, renders the attractions of the combined machine irresistible as saving in the outlay of capital, which is called for in so many new directions in modern farming. In the earlier machines of this kind, a raker was seated on the platform, raking the grain into bundles as it fell under the knife. But few of that class now hold possession of the market, though one provides a canopied platform for two binders to gather the cut grain into sheaves. The self-raking attachment has been generally adopted, saving one hand in the harvest-field and probably diminishing the draught on the whole. But a third combination is shown in these machines: a binder-attachment gathers the cut grain into sheaves, fastens them with a stout wire, and

then projects them beyond the next swath to be cut. This arrangement saves from two to four hands in the harvest-field, or from \$5 to \$10 per day in harvesting grain, a consideration of special importance, in view of the high prices of labor in the grain-raising regions. A gentleman at the Centennial once saw an old-fashioned harvest-gang of 43 men accomplishing but little more than what this machine claims to average. The mechanical constructions by which these results are secured are various and interesting, but the subject is too extensive for a brief report. In this branch of constructive enterprise the men of brains, of nerve, of untiring energy, all over our land, are contending for the prizes and awards to be distributed in the sight of the whole world, gathered by representatives at the Centennial. No more interesting contest is presented at this memorable Exposition than that between the exhibitors of harvest-machines. Each of these represents an imposing array of intellectual and physical forces, and a history in which the higher qualities of manhood are conspicuously pre-eminent. Other classes of machinery likewise represent a powerful combination of capital, intelligence, and experience, but the most animated and interesting struggle for supremacy will be between the rival harvester.

Among harvesting-machines the official Centennial catalogue includes hay-rakes, tedders, and loaders. The contrivances represented at the Exhibition represent a wonderful labor-saving economy. In some rakes the dropping of the hay is effected by an automatic arrangement; in other cases it is regulated by the will of the operator, whose hand or foot elevates the tines and allows the hay to fall into the winrow. In some cases both these methods are secured, the automatic arrangement being capable of re-adjustment at the will of the operator. For the handling of hay in larger masses, several contrivances, called hay-loaders or hay-elevators, are presented. One of these is designed to facilitate the gathering of hay upon the wagon. It is a truck of two wheels, to be attached to the hinder part of the hay-wagon. Between the wheels, and revolving with them, is a skeleton cylinder, the bars of which are armed with metallic bent fingers which, on being driven lengthwise over a winrow, gather up the hay and carry it along a revolving flexible frame to the bed of the wagon. It claims to gather up a ton within five minutes as cleanly as average hay-pitchers could perform the same work. Other contrivances, representing nearly the same principles of movement and accomplishing substantially the same result, exhibit some minor modifications and adaptations, the value of which can be tested only by practical results, but they seem to have relieved the hay-harvest of its heaviest remaining labor, that of transferring the hay from the ground to the wagon. If the efficiency of these machines is but half as great as claimed; if a ton of hay can be loaded in ten minutes instead of five, it is easy to see that a moderate crop can be disposed of within the limits of a day and can be readily saved from an approaching storm. A third class of hay-harvesting machinery is that of hay-elevators. These can be adapted either to stacking the hay in the open field or to elevating it into the mow. In the former case, derricks of simple construction give the required fulcrum; in the latter, the barn-rafters afford a convenient attachment. The grappling apparatus may consist of merely a large hay-fork, which being thrust into the hay automatically gathers it in a wide and strong embrace upon being drawn upward, and when arrived at its proper position is made to drop its burden by simply pulling a small rope; or it may consist of a harpoon-fork, which being driven through a mass of hay thrusts out iron fingers at the bottom on pulling a rope attached to the top. When the

lift has arrived over its desired position the slackening of the rope withdraws the fingers and allows the hay to fall. The elevation is accomplished by horse-power, with a pulley combination. Thus every branch of this laborious hay-harvest has been relieved by mechanical processes. Some exhibitors claim to be able to unload an average two-horse wagon within ten minutes.

Another class of agricultural implements includes all contrivances for preparing farm-products for marketing and consumption. In the case of grain-crops the first process is to separate the grain from the stalk. Maize is separated by hand, no mechanical process having yet been discovered whereby the ears can be automatically gathered from the stalk, but several contrivances have proved an economical success by which the grain is separated from the cob. For the thrashing of small grain, machines embracing partial applications of principles still regulating the process were long ago constructed. But the modern thrashing-machine, with its fuller embodiment of those principles, and with its subsidiary processes of separating and cleaning the grain and of elevating the straw for stacking, indicates a great advance in economic science and art. Farmers still living once knew no better way of separating the grain from the stalk than by beating it with flails or by trampling it with horses. Could their fathers, from whom they learned those primitive methods, now revisit the scenes of their earthly labors and witness the wonderful performances of a first-class thrasher and cleaner, they would doubtless feel the most profound astonishment. But familiarized as we are with the gradual expansion of industrial enterprise and with the successive achievements of economic art, we fail to mark the grand eras of progress through which we have already passed. Yet, even to the present generation, the thrashing-machine is a wonder. It represents almost the only great agricultural process to which steam-power in this country has been successfully applied. Among the results of these machines, not including some doubtful extreme statements, one two-horse-power separator, it is claimed, thrashed at the rate of 140 bushels of wheat per hour; a large steam separator, constructed in Wisconsin for a California farmer, thrashed, separated, and cleaned barley at the rate of 10 bushels, and wheat over 9 bushels, per minute, or about 550 bushels per hour. Fanning-mills, without any marked departure from old principles and methods, exhibit a very thorough application of those principles in new arrangements and contrivances for the cleaning of grain. A cockle-separator presents a marked specialty in this class of machines.

In Machinery Hall are exhibited portable and stationary engines, easily adapted to farm purposes. Hay and straw cutters display quite a range of contrivance, from the simple, sharp-toothed hay-knife to an elaborate mechanism driven by horse or even steam power. Baling-presses, for hay, cotton, &c., of great size and strength, are on exhibition. Among the oddities is a sour-kraut cutter, filling a thirty-gallon barrel within an hour. Mills for crushing bones, phosphates, plaster, &c., and machinery for the manufacture of grain into flour, are very elaborate, especially in processes for cleaning the grain prior to crushing, and for separating the offal from the flour. Cider and wine mills and presses are also numerous.

In the steam and horse powers adapted to thrashing, and a few other processes of farm economy, simplicity of construction, maximum force, and compact mechanism seem to have been objective points in the specimens presented. If these have not yet been applied extensively to the heavy rudimentary operations of tillage, it is not for lack of invention.

tive or constructive power, but because economic conditions essential to success do not yet exist on this side of the Atlantic. A water-motor derived from the mere pressure of a hydrant is shown to be economically adapted to light machinery, such as churning, grinding fruit preparatory to pressure, &c. The old-fashioned wind-motor is exhibited in numerous kinds of wind-mills, erected in the rear of Agricultural Hall. Their power is tested in raising water from wells into elevated tanks. A machine of moderate cost and dimensions will supply enough water for a large stock-farm. This motor might also be adapted to a considerable variety of farm machinery, such as fanning-mills, churning, &c. Several devices for meat-chopping are exhibited under this head. Machinery for steaming roots, for scalding hogs, for pressing lard, for paring fruit, for sharpening tools, for making vinegar, for weighing products, &c., are numerous and varied.

At the time the observations for this report were made, the dairy hall had not been opened, and only a small part of the machinery had arrived; consequently no adequate notice of this branch of the Exposition can be given.

Foreign exhibits under the head of machinery, tools, &c., may be briefly summarized. England shows some large and elaborate steam-machinery for plowing and other operations of tillage and transportation, together with elaborate machinery for grinding wheat into flour. Some of this machinery is adapted to the miscellaneous operations of the farm, thrashing, cleaning, fanning, pumping, harrowing, chaff and straw cutting, &c. Canada shows a considerable list of improvements of tillage, harvesting, thrashing, fanning, separating, cleaning, hay and root chopping, cheese-making, cider and wine making, portable and stationary steam-engines, &c. France presents very little competition with us in contrivances for saving labor in the elementary toils of agriculture. She has a few wine and oil presses, corking-apparatus for wine-bottles, new contrivances in wine-making, mill-stones, shearing-machines, &c. Germany has a few improvements in winnowing, sorting, and grinding grain, and in brewing. The Austrian, Dutch, and Swiss catalogues show no entries under this head. Belgium has some machinery for grinding grain. Sweden has some harvesting implements and machinery, plows, and dairy utensils and appliances. Norway, with a small assortment of hand-implements, exhibits a mask for killing cattle. Italy has a few plows and some harvesting-machinery, with a butter-machine. Brazil enters some plows, a machine for preparing coffee, and a filter for sugar-distillation. The Argentine catalogue under this head is blank.

Agricultural engineering and administration.—Under this head the United States exhibits machines for ditching, road scraping and construction, stump-extracting, fence-construction, post-hole digging, ground rolling and leveling, farm-transportation, wagons, carts, harness, yokes, sleds, &c. Many of these contrivances are quite felicitous, dispensing with much labor in the heavier farm-work. Farm-buildings for residence, for the storage of implements and products, for special farm-operations, such as hop-storing, fruit-drying, &c., barns, stables, sheds, abattoirs, &c., are represented by drawings and models. Fertilizers are shown in innumerable samples by a large number of patent-fertilizer companies. The extent of this business, its annually increasing investment of capital and labor, cannot fail to astonish persons whose attention has not been continuously directed to the subject. A type of numerous very large establishments is found in the Pacific Guano Company, of Massachusetts, which has erected a neat building and is testing the economic value of its wares in the growth of flowers and plants on the grounds

This corporation has a million dollars invested ; its object is to prepare for the farmers' use native and imported guano, phosphatic minerals, fish-manure, and other organic matter, &c. England shows some milling-apparatus, grain-weighers, street-sweepers, bee-hives, disinfecting-fluid, baking-powder, &c. Canada has model gates, fencing, harrows, fertilizers, and a bee-hive model. France has some fertilizers and models of agricultural sheds. Germany has plans for gardens and models of works of drainage and irrigation. Sweden has some fertilizers and farm-drawings ; Norway some fertilizers. Italy shows a plan of General Garibaldi's system of irrigation in the valley of the Tiber, and a model bee-hive. Brazil has some specimens of guano. The Argentine Republic has artificial manures and a model of a pump. The official catalogue shows no competition in this class from any other nation.

Tillage and general management.—Under this head the United States exhibits artificial food for live stock and cage-birds, devices for training horses, shearing-machines, horseshoes and horseshoe-nails, potato-beetle destroyers, &c. The official catalogue shows no entries from foreign nations.

It should here be observed that the agricultural exhibits of Russia, Spain, and Portugal were not open for inspection at the time the preliminary observations of this report were made, and hence no reference has been made to those countries. A few small exhibits of agricultural matter are located in the main building as parts of small collective exhibits by nations whose industry is but partially exhibited. Oriental nations are conspicuous by their absence in this branch of the Exposition. The wares of China and Japan are almost exclusively in the category of art and manufacture. Turkey, Tunis, and Morocco fuddle American brains by the hookah, or challenge competition in the preparation of coffee.

The agricultural part of the Exposition, as a whole, is a grand and imposing one, but when we come to specialties we find in it very prominent and glaring deficiencies, even in branches of American production. This, however, was just what might have been expected, and was doubtless true of all the international expositions that have preceded it. The financial stringency prevailing for the last few years has decreased the number of exhibitors, and has doubtless prevented that full and complete representation in all branches of agricultural industry, especially of American production, which a greater experience and a more systematic effort would have secured. From the impulse given to industrial art by this great manifestation we may expect, on future occasions of this character, a more thorough and systematic presentation of the actual facts of agricultural as well as other departments of production. These deficiencies may, at least in part, be supplied by the official exhibit of this Department in the Government building, in which all the leading facts of American agriculture are graphically presented.—E. C. M.

PLANTING OF FOREST-TREES IN SPAIN, AND DESTRUCTION OF LOCUSTS.

The return of peace in Spain is signalized by the active enlistment of the government in measures which materially affect the agricultural interests of the country, and the development of resources so long prostrated by devastating war. The ravages of locusts, hardly less than the desolations of civil war, have brought ruin upon several of the cen-

tral provinces of the country. In addition to the employment of farmers and cultivators in collecting and destroying the larvæ of the insects, the government has resolved to employ bodies of soldiers in destroying the insects, and to appropriate money in aid of the afflicted localities.

Another subject which at this time engages the attention of the government is the planting of forest-trees, which are wanting in extensive regions of the country. A law has been proposed in the Cortes of Spain for the compulsory planting of forests on a large scale in such regions.

The Department of Agriculture is indebted to the Secretary of State for two communications from Hon. C. Cushing, the American minister at Madrid; the one embracing the royal orders on the subject of checking the multiplication of locusts, and the other the project of the law for enforcing the planting of forest-trees. These documents are subjoined.

SIR: I observe that Congress is taking measures to check the reproduction of locusts which have been so prejudicial to agriculture in some of our trans-Mississippi States and Territories. These insects are, and long have been, one of the plagues of several of the central provinces of Spain. It may be of interest to you to have information of some means employed in that country to protect the same from their ravages. In addition to the measure heretofore in use, of employing the farmers and cultivators at this season of the year in collecting and destroying the larvæ of the locusts for stated compensation at the charge of the various municipalities, it is now proposed to appropriate public money in aid of the afflicted localities, and employ bodies of soldiers to assist the inhabitants.

I annex copy and translation of two royal orders on the subject, just issued by the minister of Fomento, in the first of which representation is made of the purpose of the government to give preferent attention now, on the return of peace, to the cultivation of material interests and to the development of industrial resources, especially agriculture, which have suffered so much from the revolutions and civil wars which recent political extravagances of opinion and violences of act have brought on Spain.

I have the honor to be, very respectfully, your obedient servant,
C. CUSHING.

ROYAL ORDERS.

[Translation.]

MOST ILLUSTRIOS SIR: Not in vain had the government, seconding the noble and elevated purposes of our august monarch, promised that, so soon as peace became a fact, it would at once dedicate its first cares and its most preferent attention to the real elements of our national wealth, so much decayed and downfallen in these recent years of direful perturbation.

Our country, an eminently agricultural one, has the right to demand from the public powers the first fruits of that happy event which all Spain is now celebrating with unbounded joy; and certainly it is not for the government to haggle about bestowing them, disposed as it is to protect and encourage, by all the means within its proper sphere of action and development, the material interests of the nation, its evil-treated agriculture, its impoverished industry, and its downcast commerce.

The necessities of the war, as pressing as they were terrible, have snatched away from our fields the most vigorous of the arms that labored there, leaving their working and cultivation in lamentable abandonment, which very speedily made itself sorrowfully felt by greatly increasing the price of labor, rendering traffic difficult, and lessening production in a high degree. To these evils, which increased in gravity day by day, the government has endeavored, with all solicitude, to supply an immediate and efficient remedy, by restoring to their sad firesides, to the bosom of their afflicted families, to the parched fields which cried aloud for them, a large number of the proud youth of Spain, who, in the ranks of our heroic army, were yesterday courageously fighting on the fields of battle and shedding their generous blood for the legitimate constitutional monarchy and the liberties of their country. Seventy thousand men already discharged by the government are now spread over Spain, bearing upon their sun-bronzed brows the laurel of victory and in their hands the beauteous symbol of peace, sweet messenger of the great benefits which the country may and ought to yet hope for, if her sons do not forget the recent lessons of their misfortune, and are able to find their inspiration in the public necessities, with resolute purpose to satisfy them, by encouraging and developing all legitimate interests.

And the government has not contented itself with the mere return to their respective provinces of these thousands of men who, after having watered with their blood the

field of destruction in a hundred combats, come now to fertilize, with a more benign and beneficial means, the soil of their country; but, without leaving unheeded the important functions still confided to the army at the present time, it has ordered the return to their homes of the reserves of 1871 and 1872, meditating, moreover, the immediate granting of numerous temporary licenses, to the end that, with the concurrence under all these measures of some 140,000 men in aid of the productive forces of the country, the result of peace may be more positive, the first and most perceptible benefits being distributed among all the provinces.

But there is still more: the government, seeking its inspiration in the necessities of the country, as well as in the lively desires and sentiments of His Majesty the King, always heedful of the welfare and prosperity of his people, finds nothing to interfere with furthering, now that the occasion is propitious, a plan, the happy realization of which would compensate in a certain degree for the want of other means which are not permitted for the present by the situation of the public treasury and the general state of the country, in order to furnish capital to the farmer and abundantly diffuse the teachings of modern science, to the end of giving a correct solution to the difficult problem of obtaining from the soil the largest possible returns.

Trusting that the tranquillity of the nation will admit of it, and that all Spaniards of willing minds, inspired by the holy love of country, are to merge their spirits and their activity, their sentiments and their desires in the common aspiration of the happiness of the country, under the institutions which constitute the whole of the existing legality, guaranteeing public order by means of its attitude and its conduct, the government, which prides itself on being conservative and tolerant, now thinks of realizing one of its most elevated purposes and most ardent desires, avoiding, for the present, any further sacrifice of men on the part of the productive portion of the country, and leaving, for the present year, those who ought to have entered into the conscription, in the embrace of their families, in the peacefulness of their firesides, in the honest and reproductive occupation of agriculture.

It is to be hoped that, with the favor of Divine Providence which has so visibly been vouchsafed to our beloved King, the latter may be enabled to attain so marked a glory in the commencement of his reign, bringing with it so much good fortune to the country and so much satisfaction for the government.

But to the evils which the war has caused to our agriculture, there are, unfortunately, in these moments others to be added, which, being likewise extraordinary although of different character, threaten agricultural production in an extreme degree, if, by all available means, the revivification of the millions of germs of locusts, lying latent in immense tracks of territory throughout thirteen provinces of the kingdom, be not prevented.

The government already, with the sanction of the Cortes, is on the point of obtaining, in so far as may be possible, the indispensable resources needed in order to aid the districts most afflicted by the plague, and which, of themselves, possess the least means for combating it, and is preparing the proper measures for the just appropriation of the funds, and to the end that the service may be performed with the efficiency and rapidity demanded by circumstances; but it is needful to make the result assured in combating this new enemy, which is one of the most destructive by reason of his voracity, spreading his ravages through the terribleness of his infinite numbers. It is necessary to destroy him at his birth, to arrest him in his path, to put him to flight whenever he is able to cause the most damage, to pursue him without quarter, confining him to certain localities at least, in order that all Spain may not feel his ravages, may not weep over the terrible losses he is able to cause, and that he may not bring after him, in the track of his desolating march, misery, famine, and every manner of conflicts.

The districts which are, perhaps, the most invaded are those wherein the least population exists, wherein arms are lacking for so resolute and arduous a campaign, wherein the plow never enters, neither are the civilizing fruits of cultivation obtained. Immense extents of land turned into pasture are those always preferred by such insects, in order to the better assure their pernicious reproduction, far from the towns and centers of population, distant from cultivated lands, and where, safe from the pursuits which may be attempted by the husbandman, after their development is sufficiently complete and they have strength to spread themselves in thick black swarms, they rise, clouding the light of the sun, to fall like an avalanche which destroys and lays bare everything before it upon the most fertile and verdant places, there, where vegetation displays itself most luxuriantly and most proudly.

To avoid such terrible extremities, fraught with such dire consequences, it is imperative to hasten with efficacious and opportune means, furnishing men and resources without loss of time.

The public treasury makes, as has been already said, the sacrifice which its situation allows. The hands which are lacking, our army can supply them, giving up for such noble labors those who may not be, for the present, indispensable for the fulfillment of the duties pertaining to that branch of the service.

In this manner, at the same time that the soldier maintains his obligation in the

glorious ranks of which he forms a part, he engages, for his own advantage, and for the good, above all, of the country, in the labors most fitted to his situation and class, giving, moreover, a worthy example of the virtues which are combined in him as a citizen, and proclaiming by his acts the benefits of all-blessed peace.

Inspiring himself by these considerations, His Majesty the King (whom may God guard) has seen fit to order that the governors of the provinces invaded by the locusts, in conformity with the various military authorities, shall utilize such forces of the army as, in the judgment of those authorities, may not be indispensable for the needs of their branch of the service, recompensing the sergeants, corporals, and privates with the gratuity previously agreed upon.

By royal order, accorded in council of ministers, I say this to your illustriousness, for your information and the consequent ends. God guard your illustriousness many years.

Madrid, March 27, 1876.

C. TORENO.

The DIRECTOR-GENERAL OF AGRICULTURE, INDUSTRY, AND COMMERCE.

MOST ILLUSTRIOS SIR: To the end of guaranteeing the application of the funds destined for the work of extirpating the locust, and in conformity with what has been proposed by your direction-general, in order to give a uniform organization in all the invaded provinces so important a service, upon the results of which depends the avoidance of great evils for the agriculture of the country, His Majesty the King, (whom may God guard,) solicitous for the fate of so highly-prized interests, has seen fit to order the following:

1st. The sums which are conceded by this ministry for the service treated of, will be understood in the conception of aid given to the provinces invaded by the plague, without, however, for this reason, involving the derogation of the provisions of article 2 of the royal order of June 3, 1851, which declares the cost of the extinction of the locust to be provincial or municipal, as the case may be.

2d. The sums destined for each province shall remain at the disposal of the respective governors, who shall designate a depositary therefor from among the voting members of the provincial committee of extinction, so that he may issue in his own name the warrants which may be required. This depositary shall be directly responsible for the legitimate expenditure of the funds, to which end he shall take care to obtain the necessary vouchers.

3d. The said depositaries shall render their accounts within the term fixed beforehand by the royal order of concession, in triplicate, with the countersigned approval (*visto bueno*) of the governor of the province, and on the proper paper, accompanied by the certificate of the accounting secretary of the auxiliary commission of extinction, in accordance with the result of the entries noted.

4th. The provincial and municipal committees will conform their action to that which may be determined by the following instruction, formulated by your director-general, wherein, without changing the existing provisions governing the work of exterminating the locust, the various dispositions now in force are now re-arranged and amplified in accordance with what is counseled by the experience acquired during the last campaign.

By royal order, I say this to your illustriousness for your information and the opportune ends. God guard your illustriousness many years.

Madrid, March 27, 1876.

C. TORENO.

The DIRECTOR-GENERAL OF AGRICULTURE.

PLANTING OF FORESTS.

SIR: The spectacle of the mostly puerile and altogether sterile and profitless political debates, consisting of petty party controversies, destitute even of historical utility, which have chiefly occupied the Cortes during the first six weeks of the session, has not been auspicious to the national welfare of Spain.

These debates, which would otherwise have been tediously uninteresting, have had but one incidental good effect, that of drawing from some of the members, such as Mr. Canovas del Castillo and the Conde de Casa Valencia, admirable discourses in defense of the true interests of the country, in reply to speeches of opposition members, who seem to have spoken for no reason whatever, except to hear themselves speak.

Meanwhile, in the presence of these lamentable divagations of party spirit or personal ambition, so much in disregard of practical legislation, constant exceptions appear, which tend to afford hope that all is not yet lost for Spain. Of this nature is the measure proposed by D. Ignacio José Escobar, to enforce the planting of forest-trees, the want of which is so serious a misfortune in extensive regions of the country, especially in the broad and elevated plains of the Castilles and Estramadura.

[†] It would be a work of supererogation for me to speak in detail here of the evil con-

sequences of the comparatively treelessness of this part of Spain, not only in the immediate loss of trees themselves, but in the indirect effects of the absence of proper distribution of rains, and the consequent aridity and unproductiveness of the soil. Many persons think the deficiency of moisture in the table-lands, in so far as affected by the absence of trees, is a modern fact, produced by the progress of population and the improvidence of the people in this respect. The evil may have been augmented in this way, but has a deeper and older origin; for the treelessness of the district of the country in question, and its aridity, were noted as existing in the time of the Romans. And the progress of population does not necessarily diminish the forests.

Thus, in the State of Massachusetts, there is at present a larger proportion of acreage in forest now than there was fifty years ago, notwithstanding the great increase of population, if we may trust to the reports of the agricultural associations of that State. There, however, as in so many other parts of the United States, new forest-trees spring up spontaneously, unless prevented by tillage, on the site of the old forests cut down, and even encroach on the neighboring grounds where these are not depastured or tilled. And the problem is why they have not done so in Spain, for which no solution is presented, except that the lands are left open to pasturage by sheep or neat-cattle. But this solution is not a very satisfactory one, the question being whether the pasturage is cause or effect, just as the suggestion of fires to account for the treelessness of our prairies involves doubt whether the susceptibility of waste by fires is cause or effect.

It would seem that the prairies of Wisconsin and Iowa must have existed in a previous state to be overrun by fires, and the plains of Castile by domesticated animals, without which neither could have been so overrun; and, as to the latter, the supposition is confirmed by all which we certainly know, little as it is, of the primeval condition of Spain. However that was, the injurious neglect of plantations in Spain is plainly discernible; and such is the evil which Mr. Escobar proposes to cure by a law for the compulsory planting of forest-trees on a large scale wherever they are wanting in Spain. I observe, in passing, that the plague of locusts is understood to prevail only in regions of country comparatively destitute of forest-trees.

Annexed is a translation of the bill introduced by Mr. Escobar in the congress. It is a fresh example of the plans of national reparation entered into by the persons now in power in Spain.

I have the honor to be, very respectfully, your obedient servant,

C. CUSHING.

BILL PRESENTED BY MR. ESCOBAR.

ARTICLE 1.—In all townships of Spain, large and small, in which, in the judgment of the facultative forestal-inspectors, material possibility for it shall exist, steps shall be taken on account of the ayuntamientos (municipal authorities) for the raising and setting out of the species of trees best suited to the locality and appropriate for boundaries of the larger estates, and those existing of more than twenty-five areas situated within the municipal limits.

ARTICLE 2. Where the ayuntamiento does not own land suitable for the formation of a nursery, it may lease some for that purpose at the usual rates of the locality. The expenses of the formation, reproduction, and conservation of these public nurseries shall be divided among groups of ten ayuntamientos each, that those towns shall contribute also where nature does not allow them to be established within their limits, and which, nevertheless, will be benefited by the distribution of the saplings.

ARTICLE 3. Every cultivator of one or more estates, owned or leased by him, is under obligations to place in January and February the saplings of the annual and gratuitous distribution made by the ayuntamientos, in order to set them out along the boundaries of estates of more than twenty-five areas, beginning by setting out those which are to serve as legal boundary-marks of the different estates, and afterward in the intermediate spaces those which they obtain in subsequent distributions and substitution of live for dead trees.

ARTICLE 4. The setting-out of the trees which are to serve as legal boundary-marks will be done precisely half a meter, within the estate, from the site of the recognized land or boundary mark. When the boundary-line is in dispute, no tree shall be placed until it shall be settled by law or agreement of the parties. These trees, when grown, should be referred to in the description of the estate on making transfers of title.

ARTICLE 5. The vicinal service is obligatory, as set forth by article 74 of the municipal law, for the formation of nurseries, and for aid in the planting of the saplings distributed, as also the pouring of the quantities of water ordered, that the plants while young may take root.

ARTICLE 6. The ownership of the trees given by the ayuntamientos and all their productions belong to the proprietor of the estate, but he shall not pull them up by trunk or root, even when old and decayed, without replacing them by new ones. Those which serve as legal boundary-marks shall never be removed while they live, unless it

be that the owner of the estate is also of the adjoining one. A boundary-line shall only be suppressed and the trees removed when the ownership of two adjoining estates becomes merged into one.

ARTICLE 7. In setting out trees along the boundary-lines of estates, whatever be their size above the 25 acres, there shall be left at least a neutral meter of untilled ground, half on each side, for the transit of laborers and working-cattle, and any tree which may have been set out wrong, or in its growing shall obstruct this meter of untilled ground, shall be removed and replaced at the next distribution; so that the neutral untilled ground should be between two rows of trees of different owners.

ARTICLE 8. Without prejudice to the temporal exemption from taxes conceded by the law of rural population of June 3, 1868, to those who plant trees, the trees of the estate boundary-lines given by the ayuntamientos, as also those which individuals may voluntarily place on boundaries, these not being fruit-trees, shall be exempt from all taxation.

ARTICLE 9. It remains at the discretion of individuals to place trees, in the method and of the kinds they think best, within the estates, upon which the present law has no effect.

ARTICLE 10. The provincial deputations shall also establish sufficient nurseries to line with trees the highways of the province and of the state which may be within their jurisdictions, holding responsible, under penalty of loss of their situations, the public-road laborers who neglect the planting and preservation of the trees. The ayuntamientos will do the same as regards vicinal roads already constructed under authoritative prescriptions, and moreover will set out on the squares and public places as many as they can for the adornment and health of the town. Railroad companies are under obligation to set out trees at their own expense on the boundaries of all their roads and stations. The owners of banks of river-beds, who set out trees along the limits of their properties, will likewise enjoy the benefits of article 8.

ARTICLE 11. The propagation, care, and police of the general planting of trees on boundaries, roads, highways, and water-ways belong to the administration, with aid of the facultative body. All questions between parties regarding right of property in common, of boundary-lines, or of damage to the trees, belong to the ordinary jurisdiction.

ARTICLE 12. The government will within a term of one month form the proper regulations for the fulfilment of this law.

Palace of the congress, 28th of March, 1876.

JOSÉ IGNACIO ESCOBAR.
THE MARQUES DE VIANA.
THE MARQUES DE VILLABOBAR.
ADOLPHO BAYO.
CARLOS DE SEDANO.
R. ALZUGARAY.

CULTIVATION OF COFFEE IN MEXICO.

By Hon. JOHN W. FOSTER,
United States Minister to Mexico.

The total product of the coffee-crop of the world for 1874 is estimated at about 900,000,000 pounds,* of which amount the United States imported in 1875 one-third, or 317,970,665 pounds; which fact is sufficient to indicate the great interest which this country has in its production and cost.

The chief coffee-producing countries are Brazil, (whose product is about two-thirds of the entire amount,) the Dutch colonies, the West Indies, the Central and South American republics, and Ceylon.

Coffee was first introduced into Europe more than two hundred years ago, but during the last fifty its use has greatly increased, and of recent years the supply has not kept pace with the growing demand in the civilized world. In the United States the amount imported twenty years ago, in 1856, was 235,865,268 pounds, of the value of \$21,573,558.

*American Grocer, September 26, 1875.

In 1875 the amount imported was 317,970,665 pounds, of the value of \$50,591,488. But as the consumption is affected somewhat from year to year by the production, it is fair to estimate the average importation. The three years beginning with 1856 show an average annual importation of 221,800,000 pounds, of the value of \$20,700,000; and the three years ending with 1875 an average annual importation of 298,700,000 pounds, of the value of \$50,800,000. It will thus be seen that in the past twenty years the increase in quantity of imports of coffee has been only 34 per cent., which is 21 per cent. less than the increase of population, but that the increase in value has been 146 per cent.

It will be interesting to make a comparison with the importations of the other table beverage, tea. The increased amount of importations in pounds (annual average) of tea from 1856 to 1875, inclusive, has been 136 per cent., or 81 per cent. more than the increase of population, the latter being in the past twenty years 55 per cent. The import consumption of coffee and tea *per inhabitant*, estimating the population in 1856 at 27,000,000 and in 1875 at 42,000,000, was as follows:

	1856. Pounds.	1875. Pounds.	Per cent.
Coffee	8.21	7.11	Decrease of 13
Tea .....	.93	1.43	Increase of 54

Comparing the consumption of coffee and tea with the population, it is thus seen that the increased consumption of coffee has fallen behind the increase of population, while that of tea has very largely exceeded the growth of the country, and that there is actually less coffee used *per capita* than twenty years ago. The reason of this is not found in the decreased popularity of coffee as a beverage, as it holds a place in the taste of the American people much above tea; but the explanation is justly to be attributed to the growing demand for coffee throughout the world, and the failure of the production to keep pace with that demand, which has greatly enhanced the price. The price in gold of tea at wholesale is to-day as low as it was in 1860, before the civil war,* while coffee is nearly double the price of 1856-'60.

These statistics are given to show that the United States are deeply interested in the increased production of coffee, and in finding new and more accessible sources for its supply of this article, of which it is a much larger consumer than any other nation in the world.

It may be an unknown fact to many Americans that at our very doors, in Mexico, our neighboring republic, there exists the agricultural capacity to produce all the coffee that can be consumed in the United States, and of a quality equal to the best grown in any country. Mexico, it is true, is exporting very little coffee, and scarcely figures in the coffee-producing countries, but its capacity and adaptability for its production have been tested by more than fifty years of successful cultivation.

The topographical and climatic character of the country is admirably adapted for this purpose. The great Andean mountain range coming up through South and Central America, greatly depressed in the Isthmus of Tehuantepec, apparently for the passage of the commerce of the two oceans, suddenly springs up in Southeastern Mexico into lofty cordilleras, one branch of which follows close along the Pacific and the other along the Gulf coast of the country, holding up on these two arms the great table-land of the interior, thus affording every variety of production of the earth. The coffee-producing regions are found on the entire line of the sea-slope of the mountains from Guatemala on the south, on the Pacific side, for more than a thousand miles to the north, until it

* New York Post, March 29, 1876.

reaches a line in the State of Sinaloa where occasional frosts endanger the crop; and also for more than a thousand miles on the Gulf coast from Yucatan into Tamaulipas. In addition to these immense stretches of country it flourishes in the numerous and fertile valleys of the interior, wherever the great table land is sufficiently depressed to reach the level of tropical and semi-tropical vegetation.

The elevation above the sea at which it is thought coffee is most favorably grown is from 1,000 to 4,000 feet; but in Mexico it is cultivated with success at an elevation 4,500 feet, and it is found even still higher. So also it is grown at lower levels than 1,000 feet, as in various places in Mexico it is produced at the very sea-side. Off the eastern coast of Yucatan, on the island of Cozumel, coffee trees of prolific yield are growing nearly at the sea-level as well as in many other localities on both the Pacific and Gulf coasts. So that it will be seen that the area for the cultivation of coffee in Mexico is immense. The amount of its production, so far as natural capacity is concerned, need only be limited by the extent of land brought under cultivation.

As already stated, the adaptability of Mexico as a coffee producing country has been tested by more than fifty years of experience in its cultivation, which experience proves that in profit to the producer, as well as in quality of the article, this country has no superior. That it has not assumed the first place in exportation is to be attributed to other causes than the capacity of the soil, profit of the cultivation, or quality of the article—to the same causes which have retarded all commercial and agricultural development of the country. In 1818 and 1819 the profitability of the growth of coffee in the West Indies led to the establishment of extensive plantations in the vicinity of Cordova and Orizaba, and in 1825 they were in a flourishing state. In the valleys of Cuernavaca and Cuautla, in the interior, in 1826 there were estates where there were growing as many as five hundred thousand plants.* And elsewhere in the republic much attention was given to coffee planting at that period, and great hopes were entertained that the country would soon be largely engaged in its exportation to foreign countries. But the civil disorders, which began soon after and which continued till lately, paralyzed all business enterprises, and disappointed these hopes; so that the coffee production of Mexico has been mostly limited to supplying the home demand, which is quite large, as coffee is in very general use by all classes.

During the past few years, up to the close of 1875, there have been peace and security in the country, and the cultivation of coffee has begun to increase, so that a small exportation has commenced. The statistics of the single port of Vera Cruz will show the growth of this exportation, which, although insignificant as compared with the total production of the world, still indicates a very healthy development of this industry; it ought in a few years to become very considerable:

Exportation of coffee from Vera Cruz, 1871 to 1875.

	Pounds.
Year ending June 30, 1871	672,588
Year ending June 30, 1872	1,912,020
Year ending June 30, 1873	3,909,446
Year ending June 30, 1874	4,204,446
Year ending June 30, 1875	5,373,678

The coffee exported from Vera Cruz is all grown in that State, with the valley of Cordova, on the Mexico and Vera Cruz Railway, as the chief center of its production. A brief reference to the methods of its

* See Ward's Mexico, book I.

cultivation at Cordova may be a matter of interest to the vast number of coffee drinkers in the United States, many of whom know nothing of the article except at the daily breakfast table.*

The seed or grain, which should be selected with care, is usually planted in well-prepared beds in a nursery, shaded from the sun. The young plants are transplanted at the age of one year or eighteen months to the fields or *cafetales*, which are thoroughly cleaned of all undergrowth and the soil well prepared. As the young plants are very tender, it is necessary to protect them from the sun. For this reason open forests are used, where available, and the mountain sides affording shade are utilized for coffee plantations. In open fields a growing shade must be created, which is most quickly obtained by planting banana trees, also yielding some profit from their fruit. But the best cultivators at Cordova consider this a poor substitute. One of the most intelligent planters there has set out in his coffee fields a large number of cinchona trees, (from which quinine is obtained,) which grow well in that latitude; also valuable timber trees, as the oak, walnut, &c. The second year after planting there is a very slight yield of coffee; the third year about a half crop; and the fourth year (or when the plant is five years old) a full crop is gathered.

A reasonably rich soil is desirable for coffee, and manuring pays well in the vigor of the tree and increase of yield. The distance at which plants are set out in the field is usually about three yards (or *varas*) apart each way, although often planted closer. The cultivation consists in keeping the fields clean from weeds and undergrowth and plowing the soil; in certain localities irrigation is necessary, but in Cordova, after the plants are well started in the field, this is not required; and the better class of planters give careful attention to pruning, keeping the plant or tree at the height of from 6 to 8 feet, although if unchecked it will grow to double that height.

The trees do not yield their full blossoming at one time. The first flowering is sometimes as early as December, the second about February, and the third and most abundant the last of March and the month of April. Early in April last it was my good fortune to spend several days in Cordova, in the midst of the blossoming season. The suburbs of the city in all directions are devoted to coffee cultivation. The lanes, lined on each side with *cafetales*, presented a most agreeable sight—the pure white blossoms, clinging close along the branches half covered with the bright green leaves, gave the trees the appearance of being sprinkled with snow; and the perfume of the flowers, almost equal to that of orange blossoms, loaded the air with its fragrance.

The flower falls, leaving a round green berry, which ripens in seven or eight months, changing when ripe into a red color. Each fully-formed berry contains two grains; though sometimes it contains only one grain, which is rounded or oval shaped, called by the Mexicans *caracolillo*. On account of the different times of flowering, the picking or gathering season lasts for three or four months, each tree having to be carefully gone over three or four times by hand. This is the most tedious and difficult process of the whole cultivation; it cannot be postponed, must be done carefully, and requires an extra number of laborers; but women and children can be employed at low wages.

The first process after picking is to dry the berries, which is done by exposing them to the sun, when they shrivel and change to a black

* Hon. Matias Romero, well known in the United States as the former Mexican minister at Washington, has recently written a valuable work, in Spanish, on coffee cultivation entitled, "Cultivo del café en la Costa Meridional de Chiapas."

color. They are then put into a mortar, and the grains hulled or beaten out with a pestle. The grain is then separated from the chaff by the crude process of fanning it out by hand or winnowing, though sometimes a fan-mill is used. The coffee is afterwards picked over carefully, grain by grain, by hand, and selected; and it is then ready for sacking and the market. Up to the present the "doctoring" process of artificial coloring or bleaching, as in some countries, has not been resorted to here. The process of curing, after gathering the crop, is in a most primitive state in Mexico. It presents a fertile field for Yankee ingenuity to invent instruments and methods to facilitate the process, or for enterprise to avail of the inventions in use in other countries. And although it has been grown here for so many years, the coffee cultivation in Mexico may yet be considered in its infancy, as it is only beginning to receive the attention of intelligent and scientific cultivators. So that great improvements may be anticipated both in the cultivation and curing.

Experience has, however, proved that it is a *certain* and *reliable* crop. So far, its cultivation at Cordova has developed no disease of plant or berry. Insects do not attack it. It is very little affected by the climate, as in the locality of its production there is no frost; and although great drought may diminish the crop, it does not destroy it. The flower when in full bloom is sometimes broken off by severe winds, but this seldom diminishes the yield. The crop is also clean and comparatively easy to cultivate. After the *cafetal* is once in full bloom, the cultivation is easy. Only at the picking season is there much urgency required. Once gathered, the crop can be cured and prepared for market leisurely and at the planter's convenience.

The most prominent objection is that so much time is lost before a profit begins to be realized. If a planter commences with sowing the seed, he must wait more than five years before he obtains returns upon his investment; or four years if he plants from the nursery, as the first year's crop barely pays more than the cost of cultivation and curing. But as compensation for this, a plantation once established yields a never-failing crop, without renewal, anxiety, or uncertainty, for a lifetime. And the profit in Mexico during the past few years has been about 100 per cent. over the cost of cultivation, and 10 per cent. interest on the capital invested. The period the trees will continue bearing is variously estimated, but the usual estimate is from twenty to twenty-five years. There are, however, trees now growing in Cordova sixty or seventy years old, remains of neglected and abandoned plantations, which by pruning and cultivation are yielding a fine crop. An intelligent American planter in that valley claims that with attention and care plants ought to continue bearing vigorously for fifty years. Another important feature of coffee-planting in Mexico is that the locality of its cultivation is usually both healthy and attractive, elevated above the fatal diseases of the tropics and in the presence of the most beautiful scenery. The valley of Cordova, for instance, is among the foot-hills of the great mountain of Orizaba, whose peak is covered with eternal snow, in a rich semi-tropical vegetation, and with a remarkably equable climate, the elevation being 3,000 feet above the sea.

The average yield per tree at Cordova is estimated at about one and a half pounds, although it is claimed that, with intelligent culture, pruning, and manuring, the average yield in that valley may be increased to three pounds per tree. It is not uncommon to find trees yielding from five to seven pounds, and, in very exceptional cases, from twenty-five to fifty pounds each. With the trees, planted three yards apart each way, with the above-stated average, it is easy to estimate the yield

per acre. It is unsafe to give a detailed calculation of the outlay required in establishing a plantation or *cafetal* up to the time of yielding the first paying-crop, as much depends both upon the locality and the intelligence and economy of the planter, so that published estimates are apt to mislead. It may be stated, however, that, after the plants begin to bear a full crop, the cost of annual cultivation, up to sale in local market, is from six to seven cents a pound.

It is very difficult to give any definite idea of the price of land in the coffee-growing regions. The average price, as per sales which have been made in the valley of Cordova beyond the vicinity of the city during the past two years, has been about \$10 per acre; and, at points out of the reach of the railroad in the same State of Vera Cruz, sales have been made at \$5 per acre, or even less. But this has been in a time of great business depression; and, with a revival of commerce and a growing demand for coffee-lands, the price would very soon advance, possibly 50 or 100 per cent.

In what has preceded I have referred particularly to the coffee region having the valley of Cordova for its center, for the reason that it is the locality at present of the greatest production in the republic, and is most accessible to the American market. But there are several other localities in the country where the cultivation is receiving considerable attention, and is assuming some importance in exportation. One of these localities is the district of Soconusco, in the State of Chiapas, immediately upon the borders of the republic of Guatemala. Hon. Matias Romero owns a plantation in that district, and the recent revival of this industry there is almost entirely due to his encouragement. Several Americans and other foreigners have located there, and are engaged in planting, and quite a number of the resident-proprietors have embarked extensively in this cultivation. Among the special advantages presented in this district is the cheapness of land and labor. Public or government lands, which are subject to entry by foreigners, can be taken at from \$20 to \$25 per caballeria, (a Spanish measure of about 105 acres.) Private lands have been sold at from \$50 to \$100 per caballeria; but native land-owners here, as elsewhere in Mexico, have very little disposition to part with their estates. Continued success in coffee-culture and a growing demand will largely increase the price. Wages are reported at 25 cents per hand a day; but, of course, this very low price could not be continued with a greatly increased demand for labor. The chief impediment to the development of this industry in Soconusco is the fact that this district is a disputed territory, claimed by both Mexico and Guatemala, and until this vexed question is settled the tenure and protection of property will remain insecure.

The valley of Uruapan, in the State of Michoacan, has great celebrity for its fertility, and for the superior quality of the coffee grown there. But the most noted region, especially for the excellence of its coffee, is the State of Colima, on the Pacific coast; its product being so highly esteemed that it commands a fabulous price in the city of Mexico and more distant places of the republic. The planting of coffee began in Colima in 1858, to a very limited extent, with plants obtained from Costa Rica. The article produced was found so superior to any other grown in the country, sample lots sent to private parties in Europe being pronounced equal to Mocha, that in 1873 quite an impetus was given to the cultivation, and since that year over one million plants have been set out, which are now beginning to bear; and the planting continues to increase, coffee promising to become the principal article of export and a fertile source of wealth to the State. The demand for

all thus far produced is so great that it commands in large lots 27 cents per pound at the plantation, mainly for consumption in the interior, a small portion only being shipped to Germany, by resident German merchants, on private orders. The American consul at the city of Colima places the cost of land suitable for coffee-plantations, including water for irrigation, at from \$15 to \$30 per acre, depending on location and climate. He states that a plantation containing 100,000 plants four years old (when the first crop is realized) costs from \$10,000 to \$14,000; the proceeds the first year being about 50,000 pounds, and from the fifth year onward 100,000 pounds or upward; and he estimates the average net yearly gain at \$20,000.

Colima and some other States have passed quite liberal laws for the encouragement of coffee-cultivation, offering liberal premiums for the largest crops produced, and exempting coffee-lands from all taxes.

With peace in the country and protection assured, this industry would offer great attractions for foreign immigration and capital. And for the Mexican farmer and land-owner there is no more certain or profitable enterprise in which they can engage. To the common people, the poor, the Indian race, it presents the most desirable source of industry. It can be planted in small lots, garden plots or patches. It requires no costly machinery, like sugar, to prepare it for market. Women and children can attend to the greater part of the work. It is always reliable and commands a ready sale, for cash, at good prices. It will be a happy augury for the country to see the lower and laboring classes more generally engaged in its production, as it will give them a permanent property-interest for peace and against revolutions, and will be for them and the country a most fertile source of wealth.

Mexico for three centuries past has been famous for its great production and exportation of silver. But in coffee alone it possesses a far greater source of wealth and prosperity. Its natural capacity for its production is at least equal to that of Brazil, yet the value of the coffee annually exported from Brazil is more than three times as great as that of the silver and gold product of Mexico.

FACTS FROM VARIOUS SOURCES.

DISTANT TRANSPORTATION OF FRESH MEAT.—A correspondent of the American Farmer at Paris reports that a company formed for transporting meat by "the Tillier process" would send its first ship fitted up for that purpose to La Plata for a cargo in April. By means of metallic ether, aided by "ingenious generating cold machinery," maintaining the temperature at the freezing-point and dry, Tillier "has conserved meat perfectly fresh and savory, save a loss of 10 per cent. in weight, for fifty-seven days." The voyage from La Plata to France is expected to be made in thirty days at most. He reports that the daily consumption of fresh meat in France is 4,000 tons.

FRUIT-GROWING IN MARYLAND.—The following statements are condensed from a recent report by Mr. W. D. Brackenridge to the American Pomological Society on the progress and extent of fruit-culture in Maryland: It is estimated that on the Eastern Shore sixty thousand acres are planted in peach-trees, and that the yield the present season for the market will be 5,000,000 bushels. The season of ripening extends from the middle of July to the 1st of October. Some of these

orchards are over twenty years old, and still continue in a healthy condition. The stimulants used thus to maintain the trees are liberal applications of barn-yard manure or ground bones to the extent of 1,000 pounds to the acre. Sometimes muriate of potash and other fertilizers are applied, while the surface of the ground is kept open by frequent plowing and harrowing during each season; judicious pruning and shortening-in is considered essential to the healthy condition of the orchard. The usual remedy for the peach-borer, or worm, is to use the knife freely, and then apply a shovelful of slackened lime on the surface in close contact with the tree.

The cultivation of pears has increased very considerably within a few years. Orchards of 4,000 trees in bearing are now to be found. As a rule, good growers, with proper treatment, are found quite remunerative. The greatest drawback is the blight, for which no remedy has yet been discovered. Dwarfs are much grown on the Eastern Shore and bear very heavy crops.

Of apples, "only the very superior early and late kinds are remunerative." Plums are but little cultivated, owing to pervading and destructive attacks of the curculio and black knot. Of cherries, the Early Richmond is the most popular for the market. The only disease to which cherries are subject in Maryland is the black knot, though a black aphis, in the early season, frequently attacks the young shoots. Grapes have heretofore been chiefly cultivated for table-use; but a few vineyards have been started with a view to wine-making. The principal varieties selected for this purpose are Ives Seedling, Clinton, Catawba, Delaware, and Concord.

BRAZILIAN COFFEE.—Dr. J. Moreira, of the Brazilian commission at the Centennial Exposition, has published a small pamphlet on the coffee of Brazil, which traces that branch of production to a few seeds brought from French Guiana about the middle of the last century. Its culture began in the Amazon region, and passed thence to Maranhão, subsequently to the province of Rio Janeiro, and finally to all the other provinces. Some of these regions are now covered with immense forests of coffee-trees, where improved processes of culture and new machinery have greatly perfected the growth and preparation of this berry for market.

The coffee-tree in other countries is supposed to require an annual temperature varying between 62° and 66° Fahrenheit; but in Brazil no such limitations are noticed; it seems to grow almost equally well in all latitudes of the empire. The virgin soil of the cleared forest is planted with tress without special regard to its composition, but, in old lands, soils composed of two-thirds red clay and one-third of deposit are most desirable; reddish-yellow argillous soils on hill-sides, at a distance from the sea, are preferred. The taste and aroma of the coffee grown on bottoms is less agreeable than of that on the uplands. Trees are now propagated almost exclusively from the seed. The seed-beds are prepared in August, September, or October, and in a year the bushes are set out in the orchards, at the rate of over two thousand trees per acre, the interval of the trees in the rows being about 5 feet. The trees begin to bear at three years, but their average productive power is not realized till after five years from planting. The average annual yield is about twelve hundred pounds per acre. Each tree planted in rich land may be reasonably expected to average twenty pounds of fruit, but the general average per tree of coffee ready for market has a wide range, from one to seven pounds. One laborer can take care of twelve hundred plants.

On the high lands the gathering of the crop begins in April or May, and continues till September. We should remember that the greater part of the Brazilian Empire lies south of the equator, and the whole of it south of the thermal equator, consequently, its seasons are antipodal to ours. The berries are dried mostly by exposure to the hot sun, though some farmers employ furnaces. Terraces or sheds, with an elevation in the center, are covered with the fruit and kept exposed until perfectly dry. This process produces the thick-hull, or sun-dried coffee. Some farmers take the berries immediately to the press, and after thoroughly pressing and washing them, expose them on terraces or sheds till perfectly dry. Others, again, keep them steeped for several days in water prior to drying, in order that the hulls may come off more readily. By the last two methods the washed or pulpless coffee is produced. The hulling process is performed by machinery, the cylindrical hullers being preferred to the disk hullers, as the former do not crush the seed. American machines, especially those of Ledgerwood & Co., are mostly used in hulling, screening, and polishing the berry. Some of these machines have been known to clean over eight thousand pounds of coffee in ten hours. The Albion coffee-huller cleans from twelve hundred to fifteen hundred pounds in twelve hours.

Coffee is mostly exported from four leading ports: Rio de Janeiro, Santos, Bahia, and Ceará. Rio de Janeiro coffee, either upland or bottom land, is graded as superior, good firsts, ordinary firsts, low firsts; good seconds, and low seconds. Santos coffee, when well prepared, is considered as first class. That of Ceará is about equal to Laguayra coffee in European markets. Bahia coffee, though inferior, finds access to some markets, and is graded S, SS, and SSS.

England and Italy prefer the aromatic washed coffee of Brazil; Russia, Denmark, and part of Germany, the bitter sun-dried article. Brazil furnishes more than half the coffee consumed by the world's population, and much of it is sold under brands of Mocha and Java coffee. The popular preference for these Asiatic brands, then, has but a slender basis of fact upon which to rest, and is very apt to be imposed upon by the Brazilian product, the qualities of which, by their growing excellence, tend to keep alive this popular prejudice. In 1800 Rio Janeiro exported only 10 sacks; in 1820, 97,500 sacks; in 1830, 391,785 sacks; in 1840, 1,068,418 sacks; in 1850, 1,343,484 sacks; in 1860, 2,127,219 sacks; in 1870, 2,209,456 sacks; in 1874, 2,673,281 sacks. The exports of the province of Bahia rose from about 100,000 pounds, in 1810, to nearly 120,000,000 in 1869-'70. From 1869 to 1872 Santos, in the province of San Paulo, exported over 200,000,000 pounds. In 1870 the province of Espirito Santo exported 1,150,000 pounds. The province of Ceará raised its exports from about 57,000 pounds, in 1839, to 2,703,000 pounds in 1870-'71. These figures show an immense productive power in this interest, to which much capital and enterprise have been attracted from the United states.

LATE ENGLISH AGRICULTURAL EXPERIMENTS.—Professor Wrightson, of the Royal Agricultural College at Cirencester, gives the following results of experiments on the college farm under his direction in the culture of swedes:

1. That poor land and in poor condition derives the greatest benefit from artificial dressings.
2. That land in high condition has been proved, in many cases, to derive little or no benefit from the use of artificial dressings.
3. That land in this neighborhood appears to be satisfied with moderate dressings, and the use of heavier dressings is not attended with commensurate results.

4. That 3 cwt. of ordinary mineral superphosphate per acre has given the best economic results during several year's experience extending over hundreds of plots.

5. That guano, nitrate of soda, organic matter, and even farm-yard dung diminish the germinating power of swede seed, and cause a blankiness in the crop when they are brought in contact with the seed.

6. That guano and nitrate of soda applied to the growing swedes increase the crop, but scarcely to an extent to warrant their general use.

7. That the average increase in swede crops from the use of 3 cwt. of superphosphate amounts to 5 tons 6 cwt. per acre. That in some cases the increase has been *nil*, while in others it has been as much as 14 tons per acre.

Among the deductions from his experiments in grain-growing Professor Wrightson states the following: 1. Wide drilling and thin seeding in his neighborhood is more successful with barley than with wheat. 2. That barley may be sown 16 inches apart, and with half the usual quantity of seed without injuring the growth.

DOES BUCKWHEAT POISON SHEEP?—A farmer of Kent County, England, at the close of the dry, hot summer of 1870 had 378 lambs on his farm which, in consequence of the drought and failure of the grass-crop, was heavily overstocked. These lambs were, at the close of the season, in very poor condition, and, to bring them up again, were placed upon a field of buckwheat. They soon began to show signs of giddiness, and even intoxication, fighting and butting each other in a very unlamblike manner. Soon their faces, heads, and especially their ears, were covered with ulcers. The eyelids swelled in many cases, causing total blindness, and in others the eyes were totally destroyed by ulceration. A copious discharge of pulverulent mucus from the nose, swollen lips, and cessation of appetite marked the course of the disease. The sun and the flies began to terrify the afflicted animals, and several deaths occurred. That the disease was not variola was shown by the fact that there was no eruption inside the thighs or on other hairless spots. Of 57 lambs not placed in the buckwheat-field not one was affected, all were perfectly healthy. To test the contagiousness of the disease several affected rams were turned into the same inclosure with perfectly sound ewes, and though they copulated and lambs were the result, no trace of disease was found upon either the mothers or the offspring. The farmer is fully convinced that the disease was caused by the poisonous quality of the buckwheat, which had greater power in consequence of the low vitality of the animals. The ulcerations were dressed with a weak solution of carbolic acid, and small doses of ferri sulph., gentian, and spirits of terebinth were administered. The buckwheat was probably nearly ripe, or at least in full flower, at which period it is known to contain an element of an intoxicating character. It is said also to produce erysipelas-like eruptions in different kinds of animals, with symptoms of cerebral congestion.

HORSE POISONING.—The Newark (England) Advertiser states that in some English agricultural sections a very odd notion has taken possession of grooms that a mixture of arsenic, copperas, and vitriol, administered internally, will brighten the skins of horses and give them a beautiful glossy surface. The dose is generally given in small doses and consequently the injurious influence is more insidious in its advances. But in some cases reckless ignorance has transcended the bounds of common prudence, and several valuable horses have died from direct poisoning. One farmer at Besthorpe, after losing five fine cart-horses, instituted a post-mortem examination conducted by a skillful veterinary surgeon. The liver was found to be rotten, the kidneys in a state of advanced decomposition, the lining membrane of the stomach eaten

away and the heart flabby. Traces of poison were easily detected. The groom, on being interrogated, confessed that for two months he had been giving to each horse twice a week a dose of powders sufficient to cover a half-penny, the powder being compound of arsenic and copperas. The lazy groom doubtless calculated on saving himself labor in currying the animals by means of drugs which should make the animals' coats clean and bright. There is a tendency among grooms of horses kept for pleasure-carriages and in livery-stables to use nostrums, the effect of which cannot be otherwise than destructive upon the health and vitality of the animals. Farmers generally are very little disposed to such destructive quackery.

IRISH CATTLE-TRADE.—Official statistics show that the average aggregate value of the cattle, sheep, and swine furnished by Ireland for the English markets is over £12,000,000 or \$60,000,000. Complaints of disease among Irish cattle have, upon investigation, resolved themselves into three categories: 1. Injudicious and cruel driving; 2. Filth-saturated holds, cattle-lairs, and disease-infected railroad-trucks; 3. Exposure, starvation, and consequent exhaustion. A reform in the methods of transportation is loudly demanded. A strong movement is on foot to compel steamer and railway companies to observe some sanitary regulations; to cleanse their trucks; to provide ample room for the comfortable shipment of animals, and to apply disinfectant chemicals to remove the germs of organic disease.

GROWING WOOD FOR FUEL.—A Canadian farmer, about twelve years ago, planted six American cottonwood-trees, and one silver Abele poplar, on seven square rods. Lately cutting them down and preparing them for fuel, he realized four cords of nice wood. An acre at the same rate would have yielded eighty cords.

CROPS OF INDIA.—The northwest provinces of India are almost exclusively agricultural. The staple crop is wheat, which is often grown year after year on the same land till the average falls to 3 or 4 bushels per acre. The late crop of the Indian Empire was about average, or 12 bushels per acre. A field of good land, cultivated by a native, yielded 17 bushels of grain and 14 cwt. of straw per acre; but this is a very favorable specimen of Hindoo farming. A field of poor land in the vicinity cultivated by an Englishman, with an English plow, averaged 19 bushels per acre of grain and 17 cwt. of straw. A third field, manured with crushed bones, produced $28\frac{1}{2}$ bushels per acre of grain, besides 30 cwt. of straw. A fourth field, fertilized with a little stable-manure and village-sweepings, averaged 36 bushels of grain and 48 cwt. of straw per acre. The third and fourth fields were broken deeply with an English plow, and subsequently widened with a Hindoo plow, which makes a tolerable cultivator.

Industry being but little diversified, home markets are few and unimportant, and access to foreign markets somewhat precarious. This causes low prices and consequently great misery among the cultivators, whose returns are insufficient for their taxes and living-expenses, small as the latter are. The large crop of 1875 cut down prices of wheat to an average of 55 cents per bushel in twelve northwest provinces, against 78 cents in 1874. The Indian government has contemplated the revival of a former practice of the East India Company, viz., to make remittances for home charges in England in wheat instead of cash. The effect of government purchases would be to raise the local markets to a scale of living-prices.

The natives succeed very poorly with root-crops, their turnips being

generally dry, stringy, and indigestible. An English farmer on the same soil raised 11 tons of very superior turnips. The above are but specimens of the difference between English and Hindoo farming generally.

FRENCH CROPS.—From recently-published statistics it appears that in 1820 land in France sown in grain averaged about $10\frac{1}{2}$ bushels per acre. In 1874 the average yield is stated at $21\frac{1}{2}$ bushels, or a doubling of production in half a century. As the French population doubles itself only in one hundred and sixty years, the above fact would indicate that food products are increasing faster than the mouths that are to consume them. This increase of production is due to the adoption of more scientific methods than those prevailing a half century ago. In potatoes, however, the statistics of 1874 show a smaller increase. In 1820, the average product was 79.3 bushels per acre; in 1874, 120.8 bushels. In 1815, 11,341,500 acres were sown with grain, yielding 119,085,750 bushels; in 1874, 17,080,240 acres yielded 386,517,625 bushels. The price of wheat in 1874 was 44s. 6d. per quarter, or about \$1.35 per bushel; in 1874 it was 58s. 5d. per quarter, or about \$1.76 per bushel.

WASTE OF FERTILIZING PRINCIPLES.—From a series of analyses made by M. Boussingault, of the French Academy of Sciences, it appears that a cubic meter of water passing under the Pont d'Austerlitz, in the heart of Paris, contained one-ninetieth part of an ounce of ammonia, and one-twenty-fifth of an ounce of nitric acid. This was during the severe spring-flood of 1876. When the river is at its average stage there is but a third of this quantity of ammonia and a fourth of the nitric acid in a cubic meter of water. The increased amount of these elements during the flood is due to the fact that the swollen waters covering a wider portion of the soil extract more of its fertility. The water of the Nile is said to be richer than that of any other river on earth in these fertilizing matters, containing about one-seventh of an ounce per cubic meter of nitric acid. At the date of Boussingault's observation the Seine was running 143,510,400 cubic meters in twenty-four hours, and in this mass about 47 tons of ammonia and 182 tons of nitric acid were swept into the ocean.

FOREST-PLANTING IN FRANCE.—The past spring has been very favorable to the large areas in France lately planted in forests. It is stated that 5,000,000 hectares or 12,350,000 acres—about half the area of Ohio—have become unproductive as agricultural lands. Pine-trees without any cultivation and a very inexpensive supervision can be made to grow upon these barren acres, netting about \$2.50 per acre of annual profit. This would add to the productive capacity of these lands about \$30,000,000 per annum. Other trees have been planted with similar economic results, and now landed proprietors are looking to tree-planting as a means of utilizing their unproductive acres.

SPARE THE BIRDS.—M. Waddington, French minister of public instruction, at the request of his colleagues, the ministers of agriculture and of the interior, has issued a circular to the departmental prefects detailing the injuries suffered by growing crops from the ravages of destructive insects, and enforcing the necessity of protecting those classes of insectivorous birds which prey upon them. The same fact is noticed and deplored in France which has been recognized by intelligent agriculturists in this country, that there exists in the minds of people an unfortunate and inveterate tendency to destroy these birds.

Their kind offices in destroying vermin are in many places stupidly ignored, and they are pursued with relentless destruction as public enemies.

In order to disabuse the minds of the rising generation of these prejudices, and secure proper protection for the "farmer's friends," the prefects are directed to bring this matter to the attention of superintendents of instruction and teachers, and cause them to show their pupils how to distinguish injurious insects from harmless ones, and to indicate the classes of birds which prey upon the former. The protection of the latter is to be impressed upon the minds of youth as a public duty, and every effort is to be made to secure a spontaneous and hearty co-operation with the authorities in this great work. But in case such methods should fail, the prefects are reminded of certain statutory enactments, enforced by severe penalties, which are to be clearly indicated to the pupils, and to be rigidly enforced by the relentless prosecution of all infractions of the same. In some communes protective societies have been formed among the pupils of different schools. Good results have already flown from this new organization, which promises to extend itself throughout the republic.

UTILIZATION OF TANNERY REFUSE IN FRANCE.—The tanning industry is largely developed in Western France, more especially in Brittany. An attempt has been made of late to utilize the organic residuum of the tan-yard. Two classes of organic refuse, animal and vegetable, are distinguished in these tanneries, the former being much the more valuable as fertilizers. The process of their elimination from the leather embraces, first, subjecting the hides to the prolonged action of milk of lime. The hair is then removed, and necessarily retains a large mixture of lime. The patches of fleshy tissue adhering to the inner side of the hide and its external cuticle are next removed and mingled in heaps until an opportunity for selling them presents itself. These heaps contain about $7\frac{1}{2}$ per cent. of water, and $24\frac{1}{2}$ per cent. of dry matter. The dry matter, upon separate analysis, yields $84\frac{1}{2}$ per cent. of organic matter and $15\frac{1}{2}$ per cent. of mineral matter. The mineral matter averages about $3\frac{1}{2}$ per cent. of silica, $17\frac{1}{2}$ per cent. of phosphate of lime, 69 per cent. of lime, and 10 per cent. of various salts. The whole mass of organic and mineral matter in the heap contains about 7 per cent. of nitrogen. As the heaps generally remain undisturbed for two or three months, they exhale one-fifth of their water, and three-tenths of their nitrogen. This is due to the rapid decomposition of their animal matter under the corrosive action of the lime. It is then sold as manure at 3 to 5 francs (60 cents to \$1.00) per cubic meter, (1.3 cubic yards.) It is beneficial to fruit-trees, and is valuable on any non-calcareous land, but it is most speedy on light soils, where its composition is most speedily affected. The School of Irrigation at Lézardeau have tried it with excellent results, the nitrogen enriching the soil, and the lime benefiting vegetables. It also gives a superior quality to hay. If not in an advanced state of decomposition before application to the meadow the hair will remain to be gathered up with the hay, with which it will be gathered up and swallowed by the animal, in which case it cannot fail to injure the digestive apparatus. It is thought best to mix it with farm-yard manure.

The vegetable residuum of the tanning process is derived mainly from the bark which furnishes the astringent principles. The tannin combines with the tissues creating a composition which resists decay and furnishes a serviceable fabric for boots, shoes, saddlery, and other branches

of manufacture. Great quantities of bark are used, and when once deprived of their astringent principles are of no further use in the manufacture of leather. It is called tan-bark, a very spongy and fibrous material absorbing a large amount of water. This property makes it especially fit for litter of farm-stock, especially in localities where other material is scarce and dear. The water absorbed in the vat exhales more or less rapidly in proportion to the dryness of the weather, the season of the year, and the period of exposure. Its matter fully dried contains 94.9 per cent. of organic and 5.1 per cent. of mineral matter, the latter in about the following proportions to the whole, viz: Potash, 0.5 per cent.; soda, 0.2; lime, 3.7; magnesia, 0.2; phosphoric acid, 0.3; sulphuric acid, 0.1; silica, 0.1. When mixed with wheat or oat straw it will absorb more than double its weight of water. It is light, of easy transport, and cheap. The straw tends to correct its acidity, which may be further neutralized with lime or ashes; the last mixture greatly facilitates its decomposition. It is most useful when mingled with the animal refuse of tanning. This combination has been found excellent in horticulture, as it checks evaporation and prevents the desiccation of the soil. The use of this material indicates the transfer of a vast mass of what was generally considered worthless matter, to the class of excellent fertilizers.

AGRICULTURAL EDUCATION IN GERMANY.—The reported present status of agricultural education in Germany, as fostered and controlled by the imperial government, embraces the following facts and features. The system includes agricultural common schools, middle schools, and academies; and from these, an agricultural course in the universities. The course of instruction in the common schools embraces theoretical and practical lessons in agriculture; veterinary lessons and demonstrations; surveying, and something more of scientific instruction than is imparted in other elementary schools. The middle schools teach arithmetic, history, and geography; the English, French, and German languages, chemistry, physiology, botany, and zoology; agricultural management in general, with lectures on veterinary treatment, drawing, building, and agricultural laws. These two classes of agricultural schools are especially designed to impart the best practical education for their vocation, to those who, without higher advantages, are to become small farmers or overseers of small farms. Accordingly, in connection with their studies and under direction of qualified teachers, they are required to practice all kinds of farm-work, in order that they may acquire practical judgment and skill for doing the same themselves, or directing laborers under them to do it, in the most approved and profitable way. There are scattered through the empire something over 150 of these two classes of schools, though some of them are limited in the course of instruction to specialties, as vine and fruit culture, horticulture, bee-keeping, &c. The pupils receive board and lodging in the establishment; each pupil is required to pay only \$55 a year, the state paying the remainder.

There are in the empire six agricultural academies; located at Eldena, Proskau, Poppelsdorf, Munich, Tharand, and Hohenhein. Connected with these academies are lands on which the students are given demonstrations and training in experimental processes, in addition to instruction in all sciences related to agriculture.

In the universities all instruction to agricultural students is theoretical, the prevalent idea in late years being that it is better for such students, after gaining a good preparatory education, to spend a few years in practical farming previous to theoretical instruction in the

university. There are nine universities which have agricultural departments; those at Berlin, Halle, Göttingen, Königsberg, Leipsic, Heidelberg, Jena, Giesen, and Kiel. Students in the agricultural course, may, if they choose, hear the lectures in all the other branches. The agricultural course embraces instruction on the following topics: Physiology, history of civilization, of agriculture, and of agricultural literature; universal arithmetic, geometry, and geodesy; experimental physics, chemistry, mineralogy, botany, and zoology; national economy, taxation of farms, agricultural management, and book-keeping; the science of finance, agricultural statistics, and agricultural and commercial laws; general land-tilling, special plant-raising, cultivation of meadows, horticulture, wood-culture, the breeding, keeping, feeding, and veterinary treatment of live-stock, wool-growing, and horse-shoeing; agricultural machinery and implements; surveying, leveling, draining, and building; practice in chemical and physiological laboratories, demonstrations and dissections in veterinary clinics and anatomy, and in draining and estimating soils.

In addition to, and disconnected with, the institutions for agricultural education, are about thirty experimental stations. These are designed, first, to protect the farmers from imposition in buying chemical or other artificial fertilizers, by testing them, as offered in the market, and exposing and prosecuting all frauds, either in the manufacturer or vender; second, to test chemically the properties of different soils, and determine to what crop they are best adapted, or what ingredients they are most deficient in; third, to determine, by experiments in feeding farm-animals, how to produce the most meat, fat, milk, butter, wool, &c., with the least cost or waste; and, fourth, to ascertain the sources and habits of worms, insects, and diseases injurious to plants, and to promulgate preventives and antidotes for the same.

FOREST AREA OF GERMANY.—The area of Germany comprises 54,102,769 hectares, (or 133,613,352 acres,) of which 13,940,541 are in woodland, or about 25.7 per cent., making the area per capita .348 hectare.

The distribution and percentage of woodland are as follows:

	Hectares.	Per cent.
In Prussia	8,137,353	23.4
In Bavaria	2,596,831	34.4
In Saxony	472,419	31.6
In Würtemberg	595,102	30.5
In Baden	510,924	33.4
In Hesse	240,083	31.2
In Mecklenburg-Schwerin	163,567	12.2
In Saxony-Weimar	90,937	25.0
In Mecklenburg-Strelitz	57,949	21.3
In Oldenburg	44,793	7.0
In Brunswick	114,520	31.0
In Saxony Meiningen	93,426	37.7
In Saxony Altenburg	39,815	30.1
In Saxony Coburg-Götha	59,330	30.2
In Anhalt	55,851	21.0
In Schwarzburg Rudolstadt	38,597	39.9
In Schwarzburg Sonderhausen	25,223	29.3
In Waldeck	44,407	39.6
In Reuss, (old line)	11,462	41.7
In Reuss, (new line)	34,117	41.3
In Schaumburg Lippe	8,682	19.6
In Lippe	33,936	29.9
In Lübeck	3,028	10.9
In Bremen	167	.6
In Hamburg	697	1.7
In Alsace-Lorraine	451,313	31.1

In the distribution of the kinds of wood the pine and fir are found in the south of Germany, oak and beech in the west and southwest, and the Scotch fir in the north and northeast, while Central Germany, to a greater or less degree, contains all these varieties.

Since 1831 the forest area of Prussia has diminished about 5 per cent.; in most of the other German States a barely appreciable diminution has taken place, while there has been a steady increase in Bavaria, Baden, and Saxony. On the whole, Germany has wood enough to meet domestic demand for many years to come.

PRODUCTION OF SALT IN GERMANY.—By the discovery of new salt-mines and a more vigorous development of the old, the production of salt in the Zollverein states of Germany during the decade from 1860 to 1870, increased 110 per cent. The amount of mineral salt obtained in 1860 was 112,803,429 hundred-weights against 783,496,100 in 1869, or an increase of 594 per cent. The yield of kitchen-salt for these two years was, respectively, 555,732,922 hundred-weights against 618,664,221, or an increase of 11 per cent. Germany, with this increased production, is now in condition, not only to meet domestic demand, but to export great quantities. The amount of salt exported in 1869 was 159,267,468 hundred-weights. The home consumption for this year amounted to 35 pounds per capita against 21 in 1860. This is owing to the increasing demand for salt for industrial and agricultural purposes. The average amount for table use per capita is about 17½ pounds a year.

THE AUSTRO-HUNGARIAN EMPIRE.—From an official publication of the Austro-Hungarian commission at the Centennial, it appears that this nationality is described in the Imperial writ of November 14, 1868, as the Austro-Hungarian Empire, or Austro-Hungarian Monarchy. It is a unique political organism, embracing two groups of subordinate states united on different principles. The Austrian state territory, or western half of the empire, recognizes Francis Joseph as Emperor of Austria; the Hungarian state territory, or eastern half of the empire, knows him as King of Hungary. The respective areas of these two sections are as follows:

AUSTRIAN STATE TERRITORY.

	Square miles.
Archduchy of Austria, Lower	6,533
Archduchy of Austria, Upper	4,559
Duchy of Salzburg	2,723
Styria	8,533
Carinthia	3,942
Carniola	3,795
Principality of Goritz and Gradisca,	
Margraviate of Istria, and city of	
Trieste	3,036
Principality of Tyrol and Vorarl-	
burg	11,144
Kingdom of Bohemia	19,741
Margraviate of Moravia	8,447
Duchy of Silesia	1,956
Duchy of Bukowina	3,971
Kingdom of Dalmatia	4,861
Kingdom of Galicia and Lodome-	
ria	29,829

Total western half..... 113,070

HUNGARIAN STATE TERRITORY.

	Square miles.
Kingdom of Hungary	85,668
Kingdom of Croatia and Slavonia	8,972
City of Fiume	6
Grand Principality of Transyl-	
vania	20,880
Croato-Slavonian border district	7,716
Total eastern half	123,062
Add western half	113,070

Total area of monarchy ... 236,132

The Austrian state territory is governed by a general legislative body, called the Reichsrath, a local autonomy being exercised by provincial diets in the subordinate states. The Hungarian state territory is under

the jurisdiction of the Reichstag, the kingdom of Croatia and Slavonia having a diet for local legislation. The legislative body of the whole monarchy is composed of sixty delegates from the Reichsrath and as many from the Reichstag, two-thirds of each delegation being elected by the popular branch of the legislature, and the other third by the hereditary branch.

The total area of the monarchy is less than that of Texas. Hungary proper is somewhat larger than Kansas or Minnesota; Upper and Lower Austria together are less than Maryland; the kingdom of Galicia is not quite equal to Maine; Transylvania is considerably less than West Virginia.

Next to Switzerland, Austro-Hungary is the most broken country in Europe, three-fourths of its territory being hilly or mountainous. Its river system is very extensive, the Danube alone, with its tributaries, draining over two-thirds of the territory. The Adriatic drains over six hundred miles of the coast, not including islands. The climate presents a wide range of variation, corresponding to latitude, elevation, and local influences. In the south, rice, figs, olives, and other semi-tropical plants are grown, while grapes and maize are produced in nearly all parts of the empire.

The population of the monarchy, exclusive of the regular army, at the close of 1869, was 35,634,858, or nearly 151 per square mile; that of the western half, 20,217,531, or not quite 170 per square mile; that of the eastern half, including the dependencies of the Hungarian Crown, 15,417,327, or over 125 per square mile. The most densely peopled provinces are those of Lower Austria, Bohemia, and Silesia, averaging over 260 persons to the square mile. Of the whole population, 9,003,700, or over 25 per cent., are Germans; 6,550,000, or over 18 per cent., are Czechs, Moravians, and Sclavonians; 5,705,800, or over 16 per cent., are Magyars; 2,685,600, or over 7½ per cent., are Romanians and Poles, in about equal proportions; Croatians and Servians constitute about 8½ per cent., and the Rutherians nearly 9 per cent.; Italians number 588,000, Slovenians 1,254,200, and Jews 1,372,300. The population resides in 927 towns, 2,039 boroughs, and 73,252 villages. Vienna has over a million inhabitants. Nineteen towns in the Austrian territory have between 20,000 and 50,000, and 43 between 10,000 and 20,000, with several very large cities. In the Hungarian territory, are Buda-Pest with over 300,000, and several otherlarge cities; 27 towns have between 20,000 and 50,000, and 54 others over 10,000.

The religious statistics show 23,750,776 Roman Catholics, 3,918,000 Greek Catholics, 8,140 Armenian Catholics, 3,037,176 schismatic Greek Catholics, 1,741 schismatic Armenian Catholics, 1,356,316 Protestants of the Augsburg persuasion, 2,128,349 of the Helvetic churches, 1,372,333 Jews, and 7,419 Mohammedans and other sects.

Over four-fifths of the soil is occupied either with agriculture or forests. The latter cover 28.34 per cent. of the whole monarchy, the largest proportion, 44.95 per cent., being in Styria, and the smallest, 21.39 per cent., in Dalmatia. The acreage devoted to general crops is 31.50 per cent. of the whole; vineyards, 0.94 per cent.; meadows and gardens, 12.87 per cent.; pastures, 14.37 per cent.; forests, 28.34 per cent.; barren land, 12 per cent. The most fertile grain lands are in Hungary, Croato-Slavonia, Bohemia, Moravia, and Galicia, all of which raise a surplus for export. In all these provinces, except Galicia and in Upper Austria, Styria, Carinthia, and Tyrol, fruit culture is very general. Flax, hemp, and sugar-beets flourish in Bohemia, Moravia, Silesia, and Hungary; hops in Bohemia; tobacco and rape-seed in Hungary. Wine is produced

in all the provinces except Salzburg, Silesia, and Galicia, and especially in Dalmatia and Hungary. In Dalmatia the olive constitutes the main support of the inhabitants. In the Alpine and Carpathian Mountain regions the growth of forests attracts great attention. Nearly a third of the population is employed in agriculture or forestry.

The average annual productions from 1863 to 1875 were as follows: Wheat, including spelt, 94,783,188 bushels; rye, 109,539,852 bushels; barley, 75,769,794 bushels; oats, 122,877,606 bushels; maize, 69,810,372 bushels; buckwheat and millet, 21,851,214 bushels; potatoes, 255,403,800 bushels; beans and peas, 8,513,460 bushels; rape, 207,160,860 bushels; wine, 608,609,400 gallons; timber cut, 7,239,985,000 feet; beet-roots and turnips, 8,820,000 pounds; flax and hemp, 330,661,500 pounds; tobacco, 110,220,500 pounds; hops, 11,022,050 pounds. The Hungarian territory produces three-fourths of the wine. The average annual value of the grain crops during seven years ending with 1875 was \$470,694,000.

Of farm animals the monarchy returned 1,430 horses to each one hundred square miles of area, (the Hungarian territory having 43 per cent. larger proportion than the Austrian territory;) asses, 33; cattle, 5,238; sheep, 8,290; goats, 638; swine, 2,882; bee-hives, 628. The Hungarian territory had 140 horses for each 1,000 of population; the Austrian territory 70; the whole monarchy, 99. Of asses and mules the monarchy had but 2 per 1,000 of the population; of cattle, 356; of sheep, 564, (Hungary having by far the largest proportion;) goats, 3; swine, 196; bee-hives, 43. The annual consumption of meat in the whole country is estimated at 1,323,000,000 pounds; the annual product of milk, at 2,007,752,800 gallons; of butter, fresh and melted, whey and curds, at 3,962,670,000 gallons; cheese, 220,473,700 pounds; of wool, 66,142,110 pounds; average value of annual product of spun silk, \$3,360,000; product of honey, 50,708,951 pounds; bees-wax, 3,307,105 pounds. The average total value of agricultural products of all kinds is estimated at \$1,152,000,000 per annum.

The mineral resources of the monarchy are rich. Gold is found in Hungary and Transylvania, and silver in both these countries and in Bohemia. Iron-ore is mined in all the provinces, especially Styria, Carinthia, Hungary, Bohemia, and Moravia. Carinthia yields quicksilver and lead; western Galicia and Carniola, zinc; the Erzegebirge range in Bohemia, tin; Bohemia and Moravia, graphite; Galicia, sulphur. Coal is mined in large quantities in Bohemia, Moravia, Silesia, Salzburg, and Bukowina. Rock-salt or brine-salt, is produced in nearly all parts of the monarchy. According to the last general census, 154,485 persons were employed in mining, of which 104,342 were in the Austrian territory and 50,143 in the Hungarian. The produce of salt-mining alone is estimated at \$50,000,000 per annum. The largest mining yields were in 1874, embracing 330,000 tons of iron, 2,800 of zinc 6,700 of lead and litharge, 900 of sulphur, 1,800 of alum, 280,000 of salt, 7,500,000 of all sorts of coal.

The consumption of coal for manufacturing increased from 500,000 tons in 1839 to 8,000,000 in 1875, and the abundant water-power of the country has been brought into extensive use. The manufacturing interest has been most largely developed in Bohemia, Moravia, Silesia, and Lower Austria.

It is estimated that about 8,000,000 persons gain a livelihood, in whole or part, by manufacturing. At the date of the last census, December 31, 1869, there were in the whole empire 298,113 employés in the building trade and productions of art, of which number 235,510 were in the Austrian territory, and the remainder in the Hungarian territory;

677,740 were workers in metal, stone, and wood, 505,772 being in the Austrian provinces; 330,285 in the manufacture of chemicals, articles of food, and tobacco, of which 248,000 were in Austrian provinces; 890,951 in textile manufactures, of which 797,398 were in Austrian territory; 478,704 were engaged in manufactures of leather, paper, &c., 307,794 being in the Austrian dependencies; 244,487 were engaged in occupations outside of industrial production, of which 178,842 were in the Austrian territory. Of the total of the foregoing classes, 2,920,280, about 77 per cent., or 2,273,316, were in the Austrian half of the empire, leaving but 616,964, or 23 per cent., in the Hungarian half.

The empire is girt around with a line of custom-houses for the taxation of foreign imports, but no province lays any impost upon the products of other portions of the half of the monarchy to which it belongs. Either half may levy upon the imported productions of the other a duty no greater than is imposed upon the same articles produced at home. Commercial treaties with foreign states impartially distribute their advantages to both halves of the empire. Standards of money, weights and measures, laws of navigation, sanitary regulations, railway, post, and telegraph laws, &c., are uniform throughout the empire. Citizens of either division are entitled to the immunities of the other. No restrictions are imposed upon the trades, except that foreigners must take out license to work in a few select ones. This license is to secure special qualifications for those trades. The imports of the empire rose from 158,100,000 florins in 1851 to 588,600,000 florins in 1874, and the exports from 136,600,000 florins to 408,200,000 florins. A florin is \$0.4803. Chambers of commerce have been organized in all sections of the empire.

The aggregate length of canals and navigable rivers in 1870 was 6,263 miles; of turnpike and other roads, 61,846 miles. The railway lines have an aggregate length of about 6,000 miles, carrying over 30,000,000 passengers in 1874, of whom only 11 were injured by accidents. The postal system embraces 6,253 post-offices, and the number of letters carried in 1874 was 286,000,000, besides 29,000,000 of postal cards. The money or its substitutes carried during the year amounted to nearly \$21,000,000. The aggregate length of telegraph-line was over 65,000 miles. All other institutions of civilization have broad development.

MARKET-PRICES OF FARM-PRODUCTS FOR JULY 1876.

The following quotations represent, as nearly as practicable, the state of the market at the beginning of the month:

Articles.	Prices.	Articles.	Prices.	
NEW YORK.				
Flour, superfine, State and western.....per bbl	\$3 40 to \$4 00	Beef, mess	per bbl \$10 50 to —	
extra State .....do.	4 50 to 5 15	extra mess	do. 12 00 to —	
extra to choice western, per barrel	4 50 to 8 75	family	do. 13 00 to \$14 00	
southern extra.....per bbl	4 85 to 6 00	mess	do. 17 00 to 17 50	
southern family	6 05 to 8 75	Lard	per lb. 20 00 to 20 50	
Wheat, No. 1 spring	1 20 to 1 30	Batter, New York and Vermont, per pound	20 to 25	
No. 2 spring	1 12 to 1 17	western	per lb. 18 to 22	
winter, red, western, per bushel	85 to 1 45	Cheese, New York and Vermont factory	per lb. 6 to 10½	
winter, amber, western, per bushel	93 to 1 45	Sugar, fair to good refining, do.	— to —	
winter, white, western, per bushel	1 25 to 1 45	Cotton, ordinary to good ordi-	nary	
Corn	56 to 61	per lb. 8½ to 10½	low middling to good middling	per lb. 8 8 to 10 8
Oats	34 to 42	Wool, Ohio and Pennsylvania, per pound	11½ to 13	
Rye	80 to 95	Michigan	per lb. 30 to 43	
Barley	90 —	other western	do. 28 to 34	
Hay, baled, first quality, for re-	16 00 to 19 00	pulled	do. 28 to 34	
tail	baled, second quality, for shipping	combing fleece	do. 15 to 40	
Beef, mess	10 00 to 11 00	California	do. 43 to 46	
extra mess	12 00 to —	PHILADELPHIA.		
Pork, mess	19 75 to 19 85	Flour, superfine	per bbl. 3 25 to 4 00	
extra mess	— to —	Pennsylvania extra to choice	per bbl. 4 25 to 6 50	
Lard	19 50 to —	western extra to choice, per barrel	5 00 to 6 50	
Butter, western	11½ to 11½	Wheat, white	per bush. 1 35 to 1 47	
State dairy	16 to 27	amber	do. 1 30 to 1 47	
Cheese, State factory	18 to 28	red	do. 80 to 1 38	
western factory	7 to 11	Rye	do. 75 to 80	
Sugar, fair to prime refining, per pound	6 to 9½	Barley	do. 55 to 95	
Cotton, ordinary to good ordi-	8 to 8½	Corn	do. 54 to 58	
nary	8½ to 10	Oats	do. 28 to 40	
low middling to good middling	— per lb.	Hay, baled, prime	per ton. 14 00 to 15 00	
Tobacco, lugs	11 to 12½	common to fair shipping, per ton	11 00 to 13 50	
leaf	6 to 8	Beef, western mess	per bbl. 6 00 to 8 00	
Wool, American XXX and pick-	8 to 10	extra mess	do. 10 50 to 11 00	
lock	46 to 48	Warthman's city family, per barrel	14 50 to 15 00	
American X and XX, per pound	38 to 44	Pork, mess	per bbl. 20 50 to —	
American, combing, per lb	48 to 58	prime mess	do. 17 50 to —	
pulled	25 to 40	prime, (extra)	do. 17 00 to —	
California spring clip, per pound	19 to 25	Lard	per lb. 11½ to 15	
California fall clip	13 to 16	Butter, choice Middle State, do.	21 to 26	
BOSTON.		choice western	do. 20 to 22	
Flour, western superfine, spring, per bbl	3 00 to 3 50	Cheese, New York factory, per lb.	7 to 10½	
common spring extra, per bbl	4 25 to 4 75	Ohio factory	do. 4 to 9	
good to fancy northwest- ern spring	4 75 to 9 00	Sugar, fair to good refining, per lb	8 to 8½	
good to fancy western win- ters	5 75 to 8 50	Cotton, ordinary to good ordi-	8½ to 10	
southern family	6 50 to 8 75	nary	per lb. 8 50 to 10	
Wheat	97 to 1 45	low middling to good middling	per lb. 11½ to 12½	
Corn	55 to 63	Wool, Ohio and Pennsylvania X and XXX	per lb. 40 to 42	
Oats	30 to 50	other western	do. 30 to 36	
Rye	90 to 95	pulled	do. 22 to 36	
Barley	— to —	combing	do. 40 to 55	
Hay, eastern and northern, per ton	16 00 to 21 00	tub-washed	do. 30 to 45	
BALTIMORE.				
Flour, superfine	per bbl. 3 00 to 3 75	Flour, superfine	per bbl. 4 00 to 6 50	
extra	do. 4 00 to 6 50	family	do. 7 00 to 8 50	

Market-prices of farm-products—Continued.

Articles.	Prices.	Articles.	Prices.		
BALTIMORE—Continued.					
Wheat, red	per bush.	\$1 20 to \$1 30	Rye, No. 2	per bush.	\$0 67 to \$0 67½
" amber	do.	1 33 to 1 35	Barley, No. 2	do.	56½ to 57
" white	do.	1 25 to 1 35	Corn, No. 2	do.	46½ to 47
Rye	do.	64 to 65	Oats, No. 2	do.	29½ to 30
Oats	do.	33 to 45	Hay, timothy	per ton.	9 00 to 12 50
Corn	do.	50½ to 62	prairie	do.	7 00 to 9 50
Hay, Maryland and Pennsylvania	per ton.	16 00 to 20 00	Beef, mess	per bbl.	10 75 to 11 00
" western	do.	14 00 to 15 00	extra mess	do.	11 75 to 12 00
Pork, mess	per bbl.	21 00 to —	Pork, mess	do.	19 50 to 19 60
prime mess	do.	21 00 to —	prime mess	do.	18 00 to —
extra prime	do.	18 50 to —	extra prime	do.	14 00 to 14 50
Lard	per lb.	12½ to 12½	Lard	per lb.	11½ to 11½
Butter, western	do.	13 to 20	Butter, choice to fancy	do.	18 to 22
eastern, near by receipts, per pound	do.	12 to 16	medium to good	do.	14 to 16
Cheese, western factory	per lb.	— to —	Cheese, good to choice factory, per pound	do.	8½ to 9½
eastern factory	do.	— to —	Sugar, New Orleans	per lb.	— to —
Sugar, fair to good refining	New Orleans, grocery grades	8½ to 8½	Wool, tub-washed	do.	30 to 38
" New Orleans	per lb.	— to —	fleece-washed	do.	25 to 28
Tobacco, lugs	do.	6½ to 11	unwashed	do.	17 to 21
leaf, common to medium, per pound	do.	9 to 11	pulled	do.	— to —
Cotton, ordinary to good ordinary	per lb.	8½ to 9½	SAINT LOUIS.		
low middling to good middling	per lb.	10½ to 11½	Flour, winter, common to choice, per bbl.	3 50 to 6 50	
CINCINNATI.					
Flour, superfine	per bbl.	3 40 to 3 75	spring	per bbl.	— to —
extra	do.	4 25 to 4 65	Wheat, white winter	per bush.	1 12 to 1 15
family	do.	5 00 to 7 50	red winter	do.	86 to 1 30
Wheat, winter, red	per bush.	1 00 to 1 20	spring	do.	— to —
hill, (amber)	do.	1 20 to 1 30	Corn	do.	39 to 45
white	do.	1 20 to 1 30	Rye	do.	50 to 63
Oats	do.	22 to 42	Barley, fair to choice	do.	30 to 1 00
Corn	do.	48 to 51	Oats	do.	31 to 35
Rye	do.	60 to 75	Hay, timothy	per ton.	15 00 to 16 00
Barley	do.	80 to 85	prairie	do.	8 00 to 9 50
Hay, baled, No. 1	per ton.	13 00 to 16 00	Beef, mess	per bbl.	14 00 to 14 50
lower grades	do.	5 00 to 10 00	Pork, mess	do.	19 00 to 20 50
Pork, mess	per bbl.	19 50 to 20 00	Lard	per lb.	11½ to 12½
Lard	per lb.	11 to 13½	Butter, prime to choice dairy, per pound	14 to 18	
Butter, choice	do.	17 to 18	country packed	13 to 16	
prime	do.	15 to 17	Cheese, Ohio factory	do.	12½ to 13½
Cheese, prime to choice factory, per pound	do.	8 to 9	N. Y. factory	do.	13 to 14
Sugar, New Orleans, fair to good, per pound	do.	8½ to 9	Wool, tub-washed	do.	36 to 37½
prime	do.	9 to 9½	fleece-washed	do.	34 to 35
Tobacco, lugs	do.	— to —	unwashed	do.	27 to 30
leaf	do.	— to —	NEW ORLEANS.		
Cotton, ordinary to good ordinary	per lb.	8 to 9½	Flour, superfine	per bbl.	4 00 to —
low middling to good middling	per lb.	10½ to 12	extra	do.	4 25 to 5 50
Wool, fleece-washed, common to fine	per lb.	26 to 28	choice to fancy	do.	5 75 to 7 50
tub-washed	do.	25 to 34	Corn, white and yellow	per bush.	62 to 68
unwashed, clothing	do.	20 to 22	Oats	do.	35 to 42
unwashed, combing	do.	25 to 30	Hay, choice	per ton.	22 00 to 23 00
pulled	do.	23 to 25	prime	do.	17 00 to 19 00
CHICAGO.					
Flour, choice winter extras, per barrel	do.	7 25 to 7 75	Beef, Texas	per bbl.	10 00 to 11 00
common to good winter extras	per bbl.	5 75 to 7 12½	western	do.	13 00 to 14 50
spring extras, common to good	per bbl.	4 50 to 5 37½	Fulton market	per ½ bbl.	11 75 to 12 00
spring extras, choice	do.	5 50 to 5 75	Pork, mess	per bbl.	21 50 to —
patent spring	do.	6 00 to 9 00	Lard	per lb.	11½ to 13½
spring superfines	do.	3 00 to 4 00	Butter, choice Goshen	do.	32 to —
Wheat, No. 1 spring	per bush.	1 11 to 1 12	choice western	do.	23 to 25
No. 2 spring	do.	1 03½ to 1 04½	Cheese, choice western factory, per pound	9 to 11	
No. 3 spring	do.	88 to 88½	N. Y. cream	per lb.	14½ to 8½

Market-prices of farm-products, &c.—Continued.

Articles.	Prices.	Articles.	Prices.
SAN FRANCISCO.			
Flour, superfine	per bbl. \$4 00 to \$4 75	Beef, mess.....	per bbl. \$5 50 to \$10 00
extra	do. 5 00 to —	family mess.....	per $\frac{1}{2}$ bbl. 7 50 to 10 00
family and fancy	do. 5 25 to 5 75	Lard	per lb. 13 to 15
Wheat, California	per cental 1 40 to 1 65	Butter, overland	do. 16 to 18
Oregon.....	do. 1 60 to 1 65	California	do. 25 to 28
Barley	do. 80 to 1 15	Oregon.....	do. 20 to 22
Oats	do. 1 75 to 2 25	Cheese.....	do. 12 $\frac{1}{2}$ to 15
Corn	do. 1 05 to 1 25	Wool, native	do. 8 to 10
Hay, State	per ton 7 00 to 13 00	California.....	do. 15 to 19
Pork, mess	per bbl. 22 00 to 24 00	Oregon	do. 15 to 19
prime mess	do. 17 50 to 18 50		

LIVE-STOCK MARKETS.

NEW YORK.	CHICAGO—Continued.	SAINT LOUIS.	
Cattle, extra beeves... per cental. \$10 25 to —	Cattle, medium..... per cental.	Cattle, good to choice native	\$4 00 to \$4 25
good to prime..... do.... 10 00 to \$10 25	inferior natives ....do....	steers, per cental	2 00 to 3 75
common to fair..... do.... — to 9 00	Texans	common to fair natives,	2 50 to 4 00
Texans	do....	per cental	3 25 to 4 65
milch-cows	per head	inferior to common na-	
veal calves..... per cental.	— to —	tives..... per cental	
Sheep	do. 4 75 to 5 75	Texans, fair to choice,	
Swine..... do....	— to —	per cental	
PHILADELPHIA.			
Cattle, prime beeves... per cental.	6 00 to 6 75	Sheep	3 00 to 4 00
fair to good	5 25 to 5 75	Swine..... do....	3 75 to 5 25
common	4 25 to 5 00	Horses, plugs..... per head.	5 50 to 5 75
Sheep	do. 1 50 to 5 75	plain	30 00 to 35 00
Swine, corn-fed	do. 8 75 to 9 25	street-car	45 00 to 55 00
BALTIMORE.		heavy-draught	75 00 to 125 00
Cattle, best beeves... per cental.	4 57 to 5 87	good drivers	115 00 to 125 00
first quality	do. 4 12 to 4 57	extra	175 00 to 225 00
medium or good quality,		auction, and ponies, per	225 00 to 250 00
per cental		head	25 00 to 45 00
ordinary	3 75 to 4 12	Mules, 14 to 15 hands high do....	55 00 to 120 00
general average of the	3 50 to 3 75	15 to 16 hands high do....	115 00 to 150 00
market	5 12	extra	175 00 to 185 00
most of the sales	do. 4 62 to 5 50	NEW ORLEANS.	
milch-cows	— to —	Cattle, Texas beeves, choice, per	
veal calves	2 00 to 5 00	head	— to 40 00
Sheep	per cental	first quality	— to 35 00
Swine..... do....	— to —	second quality	— to 30 00
CINCINNATI.		western beeves, per cental	4 00 to 5 50
Cattle, good to prime butchers'	4 25 to 4 75	milch-cows	40 00 to 90 00
steers	per cental	veal calves	7 00 to 9 00
fair to medium	do. 3 25 to 4 25	Sheep	2 00 to 6 00
common	do. 2 25 to 3 00	Swine..... do....	6 00 to 8 00
milch-cows	per head	Horses, good condition, per head	
veal calves	— to —	plugs	
Sheep	do. 3 00 to 4 50	common	
Swine..... do....	5 90 to 6 25	Mules, well-broken, first-class,	
CHICAGO.		per head	
Cattle, extra-graded steers, per	— to —	second-class	
cental			
choice beeves... per cental	4 70 to 4 90		
good beeves	do. 4 35 to 4 60	Horse and mule	
		market closed	
		for the season.	

FOREIGN MARKETS.

WHEAT.—The latter part of May and the first half of June in the United Kingdom were marked by alternate sunshine and shower, which told very favorably upon the prospects of growing crops. The cold, backward spring has not injured the grain crops to anything like the extent that was anticipated, and vegetation generally appears to be vigorous and healthy. Warm rains about the close of the first week of June were quite general throughout the British Isles. Yet, even with the immense improvement in the conditions of growth, the more sanguine scarcely dare hope that the lost lee-way of the cold, backward spring will be recovered, though the wheat covers the ground very thickly and seems to be growing finely. French crops present the same favorable auguries, with a still greater probability from the fact that the continental climate is less subject to extremes than the insular one of England. The temporary settlement of the difficulties growing out of the eastern question, and the growing hope of a final pacification in the Turkish peninsula has dispelled much of the anxiety which gave a specially painful interest to the crop prospects. These cheering indications, agricultural and political, have quieted the tone of the markets, especially as the large supplies arriving daily from America and Russia gave present and substantial tokens of a sufficient supply of breadstuffs. The indications of growing conditions up to the very time of harvest will doubtless more or less affect prices, but there are no indications that the prices of wheat will be very greatly disturbed during the intervening period. In Germany the improvement has been especially marked, and the appearance of wheat-fields is very encouraging. Timely rains have fallen in the low countries, giving a quietus to the speculative uneasiness that had begun to show itself. In Austria, the fine weather had given a downward tendency to prices. In Algeria, the harvest had been secured in good order, and cereal crops were reported as quite satisfactory. In Egypt, the market for wheat was dull and declining for all except the better sorts. Fine rains in Australia had set the farmers to plowing, and hence the marketing of wheat was less rapid than previously.

The sales of English wheat during the week closing June 17 amounted to 40,330 quarters, at 47s. 4d. per quarter, against 37,634 quarters, at 41s. 11d. during the corresponding week of 1875. The London averages were 49s. 1d. on 1,992 quarters. The imports during the week ending June 10 were 1,004,682 cwt.

The market opened in London, Monday, June 12, with considerable firmness, notwithstanding the fine weather and the large arrivals of foreign wheat, amounting to 40,080 quarters, mostly Russian. Essex and Kent, white, brought from 45s. to 52s. per quarter; ditto, red, 40s. to 48s.; Norfolk, Lincolnshire, and Yorkshire, 40s. to 46s.; Dantzig, mixed, 52s. to 55s.; Königsberg, 50s. to 54s.; Rostock, 50s. to 53s.; Pomeranian, Mecklenberg, and Uckermark, red, 48s. to 51s.; Ghirka, 44s. to 45s.; Russian, hard, 45s. to 46s.; Saxonska, 46s. to 47s.; Danish and Holstein, red, 46s. to 49s.; American, red, 44s. to 54s.; Chilian, white, 49s.; Californian, 51s.; Australian, 52s. to 55s.

At Liverpool British white wheat (June 16) was quoted at 9s. 8d. to 10s. 4d. per cental; ditto, red, 9s. 4d. to 10s.; Canadian white, 9s. 8d. to 10s. 1d.; ditto, red club and golden drop, 9s. 4d. to 10s.; American, red winter, 9s. 10d. to 10s. 8d.; No. 1 Minnesota, 9s. 8d. to 10s.; No. 1 spring,

9s. 6d. to 10s.; No. 2 spring, 8s. 11d. to 9s. 8d.; Indian, 8s. 6d. to 10s.; Egyptian, 7s. to 8s. 9d.; California, 9s. 10d. to 10s. 2d.; ditto, club, 10s. 3d. to 10s. 6d.; Oregon, 10s. 3d. to 10s. 6d.; Chilian, 9s. 6d. to 9s. 9d.; Australian, 10s. 7d. to 10s. 10d.

In France, 11 markets advanced during the week ending June 17 against 6 the previous week; 54 remained stationary against 44 the previous week; 37 declined, or 10 less than the previous week. Prices of wheat, on the whole, ranged from 51s. to 51s. 6d. per quarter, with increasing rates for future deliveries. At Hamburg millers have been buying only enough to meet present necessities, and hence, with a fresh demand setting in, have no stock to fall back upon, but must swell that demand by extensive purchases. The best yellow Rostock brought 53s. 6d. to 55s. per quarter.

FLOUR.—The imports during the week ending June 10 were 76,070 cwt. against 104,254 cwt. the previous week. The demand had improved and higher prices had been obtained in some instances. In Mark Lane the best town households were quoted at 37s. to 43s. per 280 pounds; best country households, 35s. to 37s.; Norfolk and Suffolk, old, 30s. to 32s.; French, 30s. to 35s.; American, per barrel, 24s. to 27s. At Liverpool, English and Irish superfines brought 36s. to 38s. per 280 pounds; extra, ditto, 39s. to 41s.; French, 39s. to 41s. 6d.; Trieste, 50s. to 57s.; Chilian, 34s. to 35s.; Californian, 36s. to 38s. 6d.; American, western and extra state, 22s. to 25s. per barrel of 196 pounds; Baltimore and Philadelphia, 22s. to 26s.; Ohio and extra, 23s. to 26s.; Canadian, 23s. to 27s.; patent, 30s. to 34s. At Paris select marks flour brought 41s. 3d. to 41s. 10d. per 280 pounds.

MAIZE.—In Mark Lane white was quoted at 29s. to 30s. per quarter; ditto, yellow, 27s. to 28s. At Liverpool, American white, 27s. to 27s. 3d.; American, mixed, 26s. 6d.; Galatz, 27s. 6d. to 28s.; Danubian, 25s. 9d. to 26s. 3d.; Dari, 23s. to 24s.



